AL/OE-CR-1994-0010

ARMSTRONG LABORATORY

1993-1994 STORM WATER POLLUTION PREVENTION PLAN WATER QUALITY SAMPLING REPORT

Engineering-Science, Incorporated
57 Executive Park South N.E., Suite 500
Atlanta, Georgia 30329-2265

OCCUPATIONAL AND ENVIRONMENTAL HEALTH DIRECTORATE
2402 E. Drive
Brooks Air Force Base, TX 78235-5114

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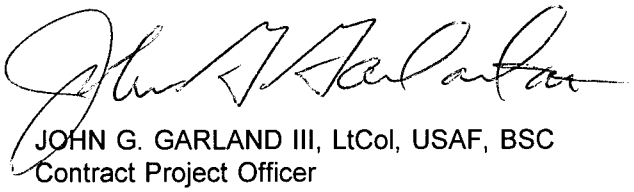
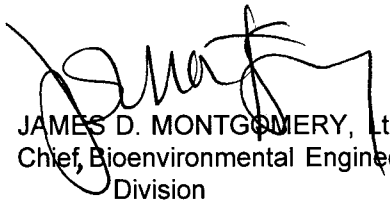


JOHN G. GARLAND III, LtCol, USAF, BSC
Contract Project Officer



JAMES D. MONTGOMERY, LtCol,USAF, BSC,
Chief, Bioenvironmental Engineering
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According to the requirements of the State of Georgia General Permit, Robins Air Force Base (RAFB) is required to establish a storm water monitoring program that involves the annual collection of water samples at specified storm water outfalls and analysis of those samples for the presence of pollutants. The analytical data derived from the analyses provides information on the general quality of the storm water discharge coming from RAFB, identifies the types and concentrations of pollutants present in the discharge, indicates the potential risk of the storm water discharge, and helps in identifying potential sources of storm water pollution at RAFB.

The information gathered during the storm water monitoring program assists RAFB in the following objectives:

- ensuring that storm water discharges comply with all requirements specified in the Georgia General Permit;
- ensuring that practices to control pollutants in storm water discharge at RAFB are evaluated and modified to meet changing conditions; and
- measuring the effectiveness of Best Management Practices (BMPs) is removing pollutants in storm water discharges.

This Water Quality Sampling Report details the storm water sampling effort conducted at RAFB in November and December 1993. The analytical results of this effort are provided and their significance in described.

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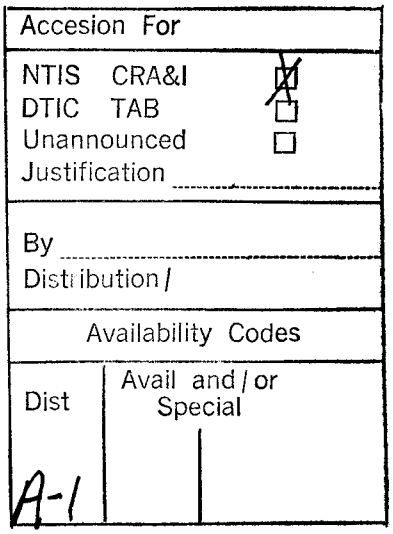

WATER QUALITY SAMPLING REPORT
ROBINS AIR FORCE BASE, GEORGIA

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SECTION 1
INTRODUCTION

According to the requirements of the State of Georgia General Permit, Robins Air Force Base (RAFB) is required to establish a storm water monitoring program that involves the annual collection of water samples at specified storm water outfalls and analysis of those samples for the presence of pollutants. The analytical data derived from the analyses provides information on the general quality of the storm water discharge coming from RAFB, identifies the types and concentrations of pollutants present in the discharge, indicates the potential environmental risk of the storm water discharge, and helps in identifying potential sources of storm water pollution at RAFB.

The information gathered during the storm water monitoring program assists RAFB in the following objectives:

- Ensuring that storm water discharges comply with all requirements specified in the Georgia General Permit;
- Ensuring that practices to control pollutants in storm water discharges at RAFB are evaluated and modified to meet changing conditions;
- Aiding in the implementation of the Storm Water Pollution Prevention Plan (SWPPP) required by the Georgia General Permit; and
- Measuring the effectiveness of Best Management Practices (BMPs) in removing pollutants in storm water discharges.

This Water Quality Sampling Report, a part of the 1993-1994 SWPPP for RAFB, details the storm water sampling effort conducted at RAFB in November and December 1993. The analytical results of this effort are provided and their significance is described.

1.1 MONITORING REQUIREMENTS

Specific requirements apply to this storm water monitoring program. These requirements are given in the Georgia General Permit and in the EPA document, *NPDES Storm Water Sampling Guidance Document* (July 1992). These requirements are outlined in the following paragraphs. For greater detail, refer to these aforementioned documents.

The storm water monitoring program begins at the effective date and lasts through the expiration date of the Georgia General Permit for RAFB. During the period, the storm water discharges identified in this report are to be monitored at least annually.

Specific criteria have been established for the type of rain event during which samples may be collected. Pursuant to State requirements, the rain event shall result in greater than 0.1 inch accumulation and shall occur at least 72 hours after the previously measurable rain event.

Two types of samples shall be collected at each discharge during a rain event:

- grab samples; and
- composite samples.

Grab samples are individual samples collected from a single location during a time duration not exceeding 15 minutes. A composite sample is a sample that is collected over a period of time and typically consists of a series of discrete samples which are combined.

Specific criteria apply to collecting grab and composite samples at each storm water discharge during a rain event. Grab samples shall be collected during the first 30 minutes of the discharge. Composite samples shall be accumulated from each storm water discharge at a rate of three discrete sample aliquots per hour. These discrete sample aliquots shall be separated in time from one another by a minimum of 15 minutes. These discrete sample aliquots shall be collected during either the first three hours of discharge or for the entire discharge (if the rain event is less than three hours long).

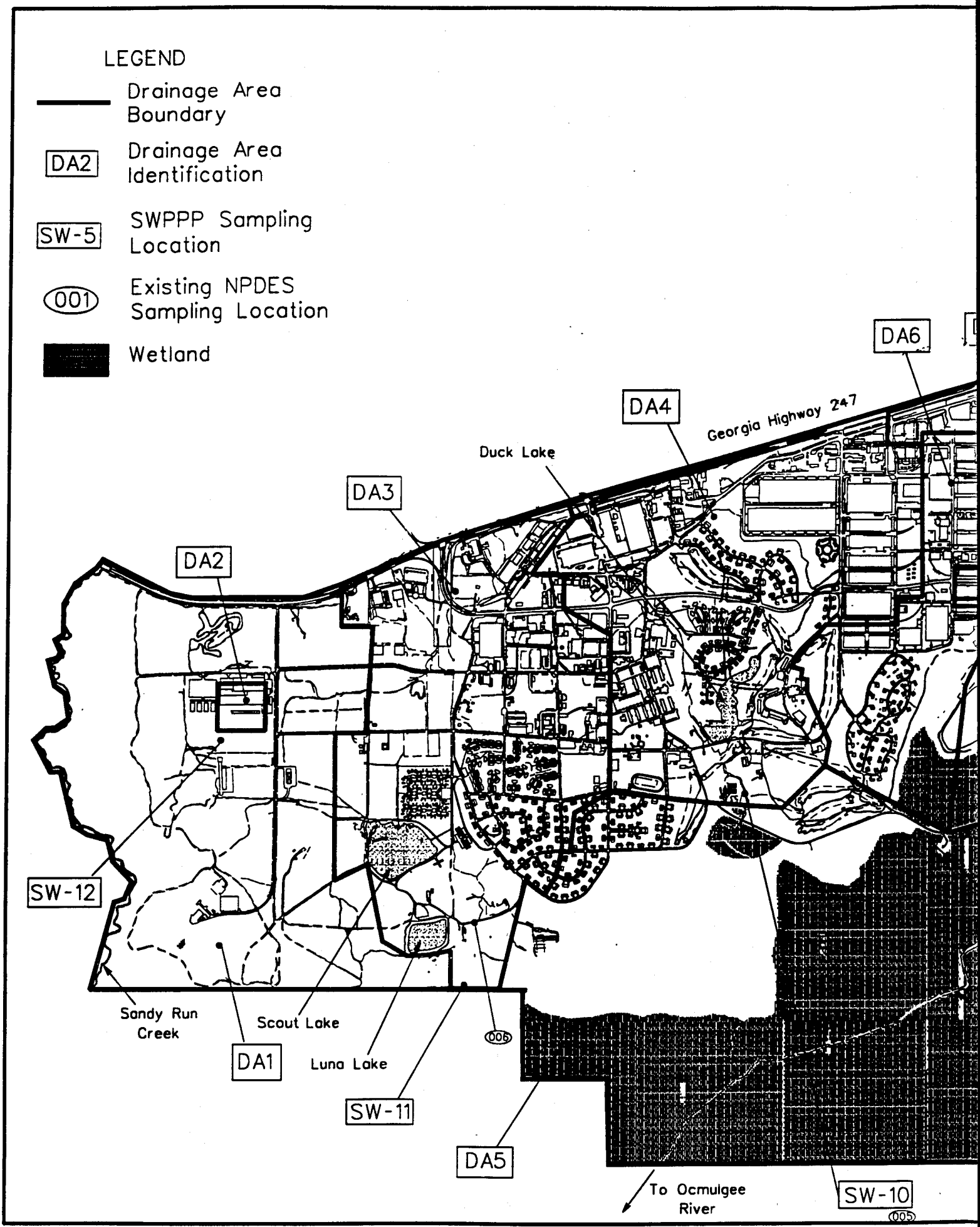
1.2 OVERVIEW OF THE NOVEMBER-DECEMBER 1993 STORM WATER SAMPLING EFFORT

1.2.1 Composite Samples

As described in Section 1.1 of this report, composite samples shall be collected at each discharge during a rain event. During this storm water monitoring program, time weighted samples were collected at each of the identified discharges at RAFB. Composite samples were comprised of several discrete equal-volume samples, each collected at equal intervals during the sampling period.

1.2.2 Sampling Locations

Figure 1.1 shows a site plan of RAFB identifying the locations of the storm water discharges where sampling took place during the sampling effort. Twelve storm water discharge locations were identified (numbered SW-1 through SW-12) from which samples were collected. One grab sample and one composite sample were collected at each of the twelve storm water discharges. These discharge locations are selected outfalls for the major drainage areas existing on RAFB that discharge storm water associated with industrial activity.


LEGEND
Drainage Area Boundary
DA2
Drainage Area Identification
SW-5
SWPPP Sampling Location
001
Existing NPDES Sampling Location
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DA6
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Georgia Highway 247
Duck Lake
DA3
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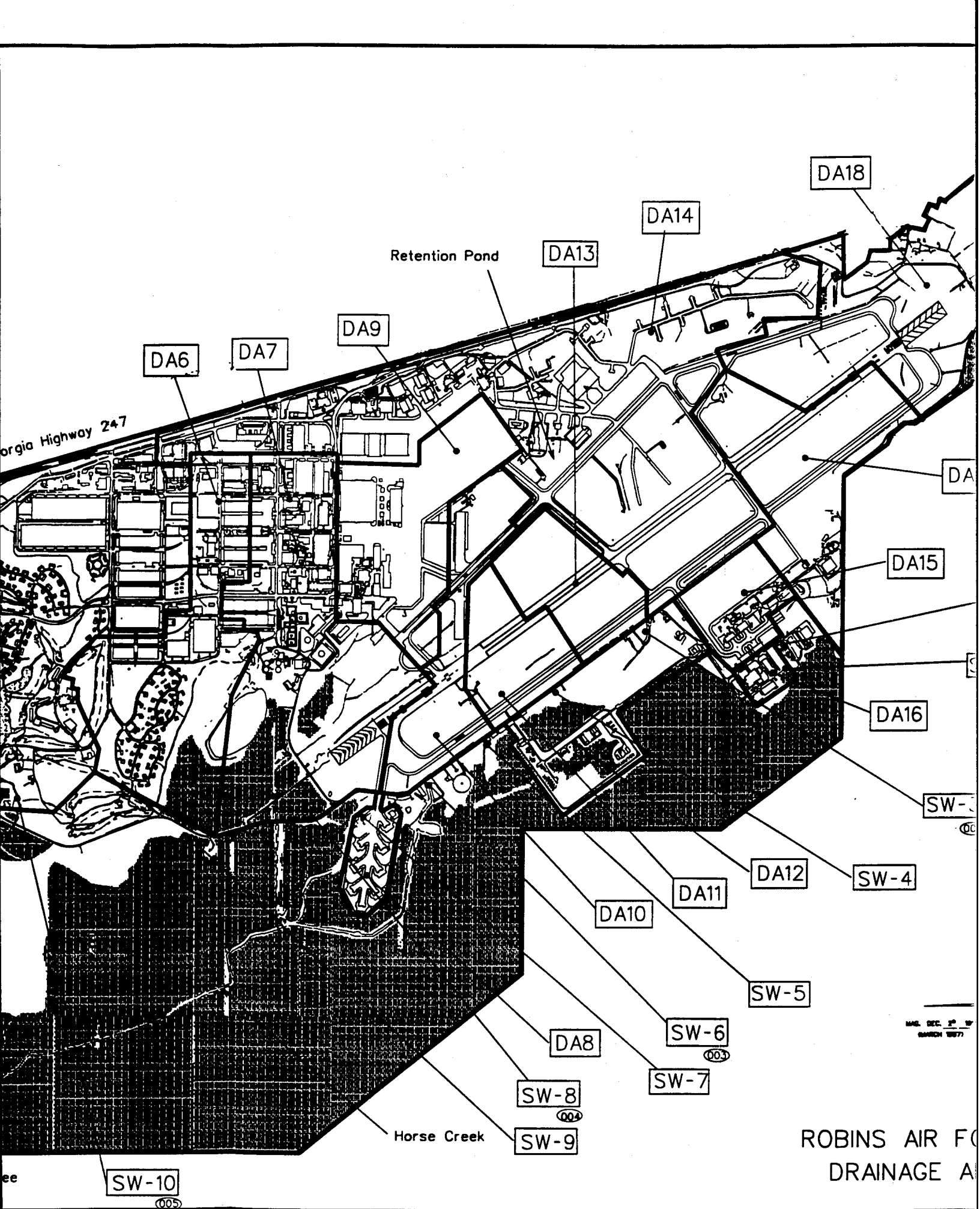
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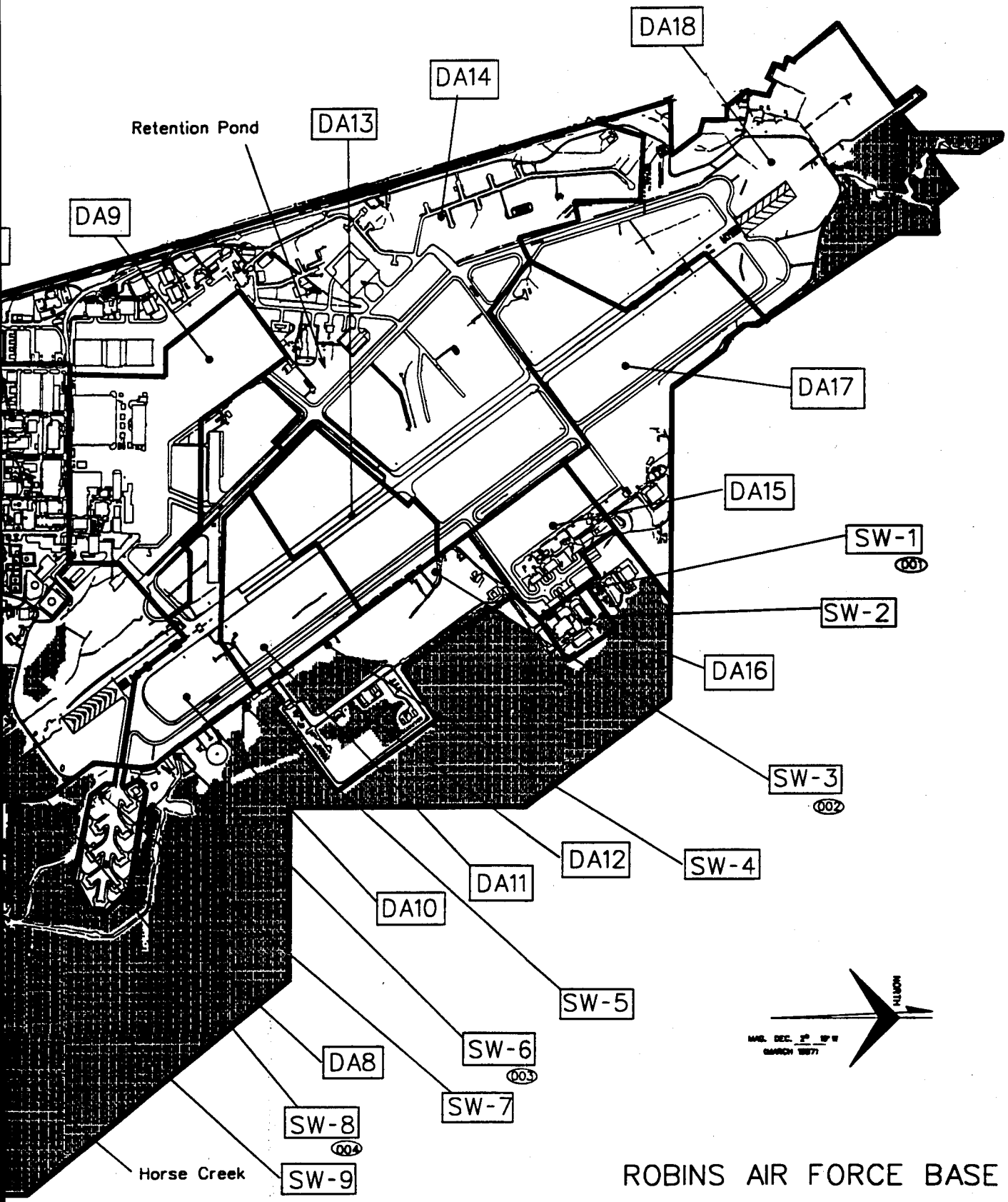
Figure 1.1



ROBINS AIR FORCE BASE
DRAINAGE AREA MAP

1.2.3 Sampling Dates

Because of the large number of discharge locations that were chosen for sampling, the storm water sampling effort was divided between two rain events. Discharge locations 1 through 8 (see Figure 1.1) were sampled during a rain event that occurred during the early morning hours of November 5, 1993. Discharge locations 9 through 12 were sampled during a rain event that occurred during the late evening of December 4, 1993.

1.2.4 Analytical Methods

The water samples collected during the sampling effort were analyzed for a wide range of analytes and other parameters using a number of analytical methods. The following sections outline these methods.

1.2.4.1 Laboratory Analytical Methods

Savannah Laboratories and Environmental Services, Inc. (Savannah Laboratories) was contracted to conduct the laboratory analyses. This laboratory is located in Savannah, Georgia, and is certified (Figure 1.2) by the State of Georgia to conduct analyses of water samples for chemical parameters.

The analytical methods were performed at Quality Control (QC) Reporting Level II, which is approximately equivalent to USEPA DQO Level 3. Grab samples were not analyzed by the same analytical methods as composite samples. Table 1.1 gives the analytical methods that were applied to the grab samples. Table 1.2 gives the analytical methods that were applied to the composite samples. Note that for the analysis of grab samples for purgeable organics by EPA Method 624, a 25 mL purge volume was employed instead of the conventional 5 mL purge volume. This modification to the method was performed to achieve lower detection limits.

Note also that the composite samples collected during the November 5 rain event were analyzed by the laboratory for residual chlorine, while the composite samples collected during the December 4 rain event were not analyzed by the laboratory for this analyte. The composite samples collected during the December 4 rain event were analyzed in the field for free and total chlorine using a Hach® field test kit.

Finally, note that the composite samples collected during the November 5 rain event were analyzed by the laboratory for fecal coliform using Method SM9222-D. The composite samples collected during the December 4 rain event were analyzed by the laboratory for fecal coliform using Method SM9221-C. The difference in the laboratory methods used for the composite samples collected during the two rain events to analyze for fecal coliform was a result of the laboratory misreading the requested method number for the first of the two rain events. Nevertheless, both of the methods produce comparable results.

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
LABORATORY CERTIFICATION

In accordance with the "Georgia Rules for Safe Drinking Water" and the
"Manual for Chemical Certification of Drinking Water Laboratories in Georgia"
SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.
Water Laboratory is hereby granted
CERTIFICATION
for the analyses of water samples for Chemical Parameters.

This certification is valid in the State of Georgia, effective this 30th DAY OF September, 1993.

This certification is contingent upon continued accreditation by A2LA for all parameters listed on the attached document. This certification is non-transferrable. ***CERTIFICATION EXPIRES*** *February 28, 1995.*

CERTIFICATION NUMBER: 1001

Program Manager, Drinking Water Program

Figure 1.2

TABLE 1.1

ANALYTICAL METHODS FOR GRAB SAMPLES
ROBINS AFB, GEORGIA

Analyte	Analytical Method	Comments
pH	EPA 150.1	None
Oil and Grease, Total Recoverable	EPA 413.2	None
Cyanide, Total	EPA 33.3	None
Purgeable Organics	EPA 624	A 25 mL purge volume was employed instead of the conventional 5 ml purge volume.

TABLE 1.2

ANALYTICAL METHODS FOR COMPOSITE SAMPLE ROBINS AFB, GEORGIA

Analyte	Analytical Method	Comments
Residue, Filterable (Total Suspended Solids)	EPA 160.1	None
Residue, Non-Filterable (Total Suspended Solids)	EPA 160.2	None
Biochemical Oxygen Demand (BOD_5)	EPA 405.1	None
Total Metals (Cd, Cr, Cu,Ni, Ag, Zn)	(ICP) EPA 200.7	None
Total Lead by Furnace AA	EPA 239.2	None
Fecal Coliform	SM9222-D	This method was used for samples collected during the Nov. 5, 1993 rain event.
Fecal Coliform	SM9221-C	This method was used for samples collected during the Dec. 4, 1993 rain event.
Fluoride	EPA 340.2	None
Residual Chlorine	SM408A	This method was applied only to the samples collected during the Nov. 5, 1993 rain event.
Nitrogen, Ammonia	EPA 350.1	None
Nitrogen, Kjeldahl, Total	EPA 351.2	None
Nitrogen, Nitrate-Nitrite	DPA 353.2	None
Nitrogen, Organic	EPA 351.2/EPA 30.1	None
Phosphorous, Total	EPA 365.4	None
Chemical Oxygen Demand (COD)	EPA 410.2	None
Phenolics, Total Recoverable	EPA 420.2	None
Organochlorine Pesticides and PCBs	EPA 608	None
Polynuclear Aromatic Hydrocarbons	EPA 610	None
Base/Neutrals and Acids	EPA 62	None

Savannah Laboratory determined that, using the analytical methods given in Tables 1.1 and 1.2, it could meet the detection limit requirements established by the Georgia Environmental Protection Division for National Pollutant Discharge Elimination System (NPDES) analytes.

1.2.4.2 Field Analytical Methods

Only one analytical method was conducted in the field: free and total chlorine. A Hach® field test kit (Hach catalog number 2231-03, Model CN-66T) was used for this analysis. Only the composite samples collected during the December 4 rain event were analyzed using this field method.

SECTION 2
PRESAMPLING PREPARATIONS

This section of the Sampling Report describes the materials and procedures used for collecting water samples during the sampling effort. Since there were two separate rain events during which samples were collected, there were also two discrete periods before each rain event during which sampling equipment and other materials were prepared for sampling. While every effort was made to maintain consistency in materials and procedures between these two preparation periods, some differences existed. Any differences are described in this section.

2.1 DETERMINATION OF TOTAL WATER SAMPLES REQUIRED FOR CHEMICAL ANALYSIS

Before conducting sampling during the two rain events of the sampling effort, the total number of water samples that would be collected during each rain event was identified. In addition to collecting samples for analysis at each discharge point, several field and laboratory quality control (QC) samples were also collected. These QC samples are described in the following paragraphs.

Trip blanks were used to determine if environmental samples were contaminated by volatile organic compounds during shipping and handling. Trip blanks are sample bottles filled by the laboratory with organic-free water and are never opened in the field. The trip blanks were prepared by the laboratory, transported to the field, kept with the environmental samples during the sampling effort, and returned to the laboratory for analysis with the environmental samples. During the sampling effort, one trip blank was included with every shipping cooler that contained samples to be analyzed for purgeable organics by Method EPA 624. These trip blanks were analyzed only for purgeable organics by Method EPA 624.

Field duplicate samples provided a measure of the short-range spatial and temporal variability of the sample matrix at a given location. The analysis of a field duplicate sample indicates both field and laboratory precision. Field duplicate samples are collected as close in time to the collection of the original sample as possible. Field duplicate samples are also collected from the same sampling location as the original sample. For each of the two rain events, field duplicate samples were collected at a frequency of ten percent per analytical method, rounded up to the next whole number.

Matrix spike/matrix spike duplicate (MS/MSD) samples were collected for some analytical methods to provide a mechanism of monitoring laboratory precision and accuracy, and also for providing insight into the way the sample matrix influences the

recovery of analytes in the various methods of analysis. Each MS/MSD sample collected in the field is a single sample that has been collected from a single sampling location at triple the volume of a regular sample. From this single sample the laboratory draws three portions: one to prepare a sample for routine analysis, one to prepare a sample used for matrix spike analysis, and one to prepare a sample used for matrix spike duplicate analysis. For each of the two rain events, MS/MSD samples were collected at a frequency of five percent per applicable analytical method, rounded up to the next whole number.

Table 2.1 provides a breakdown of the numbers of environmental samples, trip blanks, field duplicates, and MS/MSDs that were collected during each of the two sampling efforts. Note that the laboratory analytical method for residual chlorine (SM408A) was not applied to the samples collected during the December 4 rain event. The four composite samples collected during this rain event were analyzed for free and total chlorine in the field using a Hach® field test kit.

2.2 SAMPLING EQUIPMENT AND SUPPLIES

All sample collection activities during the November-December 1993 storm water sampling effort were conducted manually. Grab samples and composite samples were collected using one-liter, wide-mouth glass sampling jars. One of these sampling jars was assigned to each sampling location during each of the two rain events. Attached to these sampling jars were wire handles. The wire was affixed to each jar using a large ring-clamp. The wire handle enabled the sampling jar to be attached to a sampling boom in the event that a sampling location was too far away from the sampling personnel to reach by hand. The sampling booms were made of plastic and had a connector at one end to which the sampling jar handle could be attached. One sampling boom was assigned to each sampling location which required a boom.

For grab samples, the sample was dispensed from the sampling jar into the appropriate sample containers. For composite samples, however, the sampling jar was used to dispense aliquots of sample into a large 10-L glass composite sample jar. One 10-L composite sample jar was assigned to each sampling location during each of the two rain events. (Additional 10-L composite sample jars were required at sampling locations where field duplicate samples and MS/MSD samples were collected.)

Each 10-L composite sample jar had a nipple opening near its base. A flexible tubing assembly, constructed of Tygon® tubing, Teflon® tubing, Teflon® tape, and small hose clamps, was attached to the nipple of each 10-L composite sample jar. This tubing assembly enabled the sampling personnel to contain composite samples within the jar during sampling (with the tubing in an upright position), and to dispense the composite sample from the jar into sample containers after the compositing process was complete (by lowering the mouth of the tubing below the liquid level in the jar). Rubber stoppers, wrapped in Teflon® tape, served as seals for the top openings in the 10-L composite sample jars.

TABLE 2.1

NUMBERS OF WATER SAMPLES FOR CHEMICAL ANALYSIS
NOVEMBER-DECEMBER 1993 STORM WATER SAMPLING EFFORT
ROBINS AFB, GEORGIA

Analytical Method	November 5, 1993 Rain Event				December 4, 1993 Rain Event			
	Number of Environmental Samples	Number of Trip Blanks[A]	Number of Field Duplicate Samples[B]	Number of Env. Samples Used as MS/MSD Samples[C]	Number of Env. Samples	Number of Trip Blanks[A]	Number of Field Duplicate Samples[B]	Number of Env. Samples Used as MS/MSD Samples[C]
pH (EPA 150.1)	8 grab	(D)	1	(E)	4 grab	(D)	1	(E)
Oil and Grease, Total Recoverable (EPA 413.2)	8 grab	(D)	1	1	4 grab	(D)	1	1
Cyanide, Total (EPA 335.3)	8 grab	(D)	1	1	4 grab	(D)	1	1
Purgeable Organics (EPA 624)	8 grab	1	1	1	4 grab	1	1	1
Residue, Filterable (EPA 160.1)	8 composite	(D)	1	(E)	4 composite	(D)	1	(E)
Residue, Non-Filterable (EPA 160.2)	8 composite	(D)	1	(E)	4 composite	(D)	1	(E)
Biochemical Oxygen Demand (EPA 405.1)	8 composite	(D)	1	(E)	4 composite	(D)	1	(E)
Total Metals (Col,Cr,Cu,Ni,Ag,Zn) By ICP (EPA 200.7)	8 composite	(D)	1	1	4 composite	(D)	1	1
Total Lead By Furnace AA (EPA 239.2)	8 composite	(D)	1	1	4 composite	(D)	1	1
Fecal Coliform (SM9222-D)	8 composite	(D)	1	(E)	(This lab method was not applied to the samples collected during this rain event)			
Fecal Coliform (SM9221-C)	(This lab method was not applied to the samples collected during this rain event)				4 composite	(D)	1	(E)

TABLE 2.1 (Continued)

NUMBERS OF WATER SAMPLES FOR CHEMICAL ANALYSIS
NOVEMBER-DECEMBER 1993 STORM WATER SAMPLING EFFORT
ROBINS AFB, GEORGIA

Analytical Method	November 5, 1993 Rain Event				December 4, 1993 Rain Event			
	Number of Environmental Samples	Number of Trip Blanks[A]	Number of Field Duplicate Samples[B]	Number of Env. Samples Used as MS/MSD Samples[C]	Number of Env. Samples	Number of Trip Blanks[A]	Number of Field Duplicate Samples[B]	Number of Env. Samples Used as MS/MSD Samples[C]
Fluoride (EPA 340.2)	8 composite	(D)	1	1	4 composite	(D)	1	1
Residual Chloride (SM408A)	8 composite	(D)	1	(E)	(This lab method was not applied to the samples collected during this rain event)			
Nitrogen, Ammonia (EPA 350.1)	8 composite	(D)	1	1	4 composite	(D)	1	1
Nitrogen, Kjeldahl, Total (EPA 351.2)	8 composite	(D)	1	1	4 composite	(D)	1	1
Nitrogen, Nitrate-Nitrite (EPA353.2)	8 composite	(D)	1	1	4 composite	(D)	1	1
Nitrogen, Organics (EPA 351.2/EPA 350.1)	8 composite	(D)	1	(E)	4 composite	(D)	1	(E)
Phosphorus, Total (EPA 365.4)	8 composite	(D)	1	1	4 composite	(D)	1	1
Chemical Oxygen General (EPA 410.2)	8 composite	(D)	1	(E)	4 composite	(D)	1	(E)
Phenolics, Total Recoverable (EPA 420.2)	8 composite	(D)	1	1	4 composite	(D)	1	1
Organochlorine Pesticides and PCBs (EPA 608)	8 composite	(D)	1	1	4 composite	(D)	1	1

TABLE 2.1 (Continued)

NUMBERS OF WATER SAMPLES FOR CHEMICAL ANALYSIS
NOVEMBER-DECEMBER 1993 STORM WATER SAMPLING EFFORT
ROBINS AFB, GEORGIA

Analytical Method	November 5, 1993 Rain Event				December 4, 1993 Rain Event			
	Number of Environmental Samples	Number of Trip Blanks(A)	Number of Field Duplicate Samples(B)	Number of Env. Samples Used as MS/MSD Samples(C)	Number of Env. Samples	Number of Trip Blanks(A)	Number of Field Duplicate Samples(B)	Number of Env. Samples Used as MS/MSD Samples(C)
Polynuclear Aromatic Hydrocarbons (EPA 610)	8 composite	(D)	1	1	4 composite	(D)	1	1
Base/Neutrals and Acids (EPA 625)	8 composite	(D)	1	1	4 composite	(D)	1	1

(A) Trip blanks were included with every shipping cooler that contained samples to be analyzed for purgeable organics by Method EPA 624.

(B) Field duplicate samples were collected at a frequency of 10 percent per analytical method per rain event , i.e., one field duplicate for every 10 environmental samples, per analytical method, per rain event.

(C) This column shows the number of environmental samples chosen to also serve as MS/MSD samples. MS/MSD samples were collected at a frequency of 5 percent per applicable analytical method per rain event, i.e., one MS/MSD sample for every 20 environmental samples, per applicable analytical method, per rain event. The collecting of MS/MSD samples involved collecting triple the sample volume required for a regular sample (for all methods of analysis).

(D) No trip blanks were required for these analytical methods.

(E) No MS/MSD samples were collected for these analytical methods.

Sample containers for all analytical methods conducted at the laboratory were provided by the laboratory. Each sample container contained the chemical preservative appropriate to the analytical method assigned to that container when received from the laboratory. Table 2.2 lists the kinds of sample containers used, the methods of preservation, and the holding times for the laboratory analytical methods that were used during the sampling effort.

2.2.1 Decontamination Supplies

Certain sampling equipment (namely, the 1-L sampling jars, the sampling booms, the 10-L composite sample jars, and the tubing assemblies and stoppers attached to the 10-L composite sample jars) required rigorous decontamination before the sampling events. Because many of the items were reused for the December 4 rain event, they required a second decontamination before their reuse. The supplies that were needed for decontamination included:

- laboratory-grade detergent (e.g., Liquinox®);
- deionized water;
- high purity methanol (e.g., Fisher Scientific Optima-grade);
- high purity organic-free water (e.g., Fisher Scientific HPLC-grade);
- plastic bags and plastic wrap to contain decontaminated equipment; and
- nonpermeable gloves.

2.2.2 Other Supplies

Other supplies associated with the sampling effort included:

- wooden tables for sampling locations where flat ground surfaces were not available for placing sample jars and containers;
- plastic sheet upon which sampling equipment was placed when not in immediate use;
- ice for preserving composite and grab samples;
- cardboard boxes and plastic bags for containing each 10-L composite sample jar within a bed of ice;
- trip blanks (provided by the laboratory - for analytical Method EPA 624);
- nonpermeable gloves;
- headlamps and flashlights for nighttime sampling;
- raincoats and rain pants; and
- waterproof boots and waders.

TABLE 2.2

SUMMARY OF SAMPLE PRESERVATION METHODS, SAMPLE CONTAINERS, REQUIRED SAMPLE VOLUMES, AND HOLDING TIMES NOVEMBER-DECEMBER, 1993 STORM WATER SAMPLING EFFORT ROBINS AFB, GEORGIA

Analytical Method	Preservation Method[A]	Number of Sample Containers, Sample Volumes, and Type of Sample Container[B]	Holding Time[C]
pH (EPA 150.1)	Cool to 4°C.	One - 100 ml plastic jar	Analyze immediately
Oil and Grease, Total Recoverable (EPA 413.2)	H_2SO_4 to pH <2; Cool to 4°C.	Two - 500 ml amber glass jars	28 days
Cyanide, Total (EPA 335.3)	NaOH to pH >12; Cool to 4°C.	One - 500 ml plastic jar	14 days
Purgeable Organics (EPA 624)	HCl to pH = 2; Cool to 4°C.	Three - 40 ml glass vials	14 days
Residue, Filterable (EPA 160.1)	Cool to 4°C.	One - 1L plastic jar	7 days
Residue, Non-Filterable (EPA 160.2)	Cool to 4°C.	Use same containers as for Residue, Filterable (EPA 160.1)	7 days
Biochemical Oxygen Demand (EPA 405.1)	Cool to 4°C.	Use same container as for Residue, Filterable (EPA 160.1)	48 hours
Total Metals (Cd,Cr,Cu,Ni,Ag,Zn) By ICP (EPA 200.7)	HNO_3 to pH <2; Cool to 4°C.	One - 250 ml plastic jar	6 months
Total Lead By Furnace AA (EPA 239.2)	HNO_3 to pH <2; Cool to 4°C.	Use same container as for Total Metals (Cd,Cr,Cu,Ni,Ag,Zn) By ICP (EPA 200.7)	6 months
Fecal Coliform (SM9222-D)	Sodium Thiosulfate; Cool to 4°C.	One - 250 ml Nalgene jar	30 hours[D]
Fecal Coliform (SM9221-C)	Sodium Thiosulfate; Cool to 4°C.	One - 250 ml Nalgene jar	30 hours[D]

TABLE 2.2 (Continued)

SUMMARY OF SAMPLE PRESERVATION METHODS, SAMPLE CONTAINERS, REQUIRED SAMPLE VOLUMES, AND HOLDING TIMES NOVEMBER-DECEMBER, 1993 STORM WATER SAMPLING EFFORT ROBINS AFB, GEORGIA

Analytical Method	Preservation Method[A]	Number of Sample Containers, Sample Volumes, and Type of Sample Container[B]	Holding Time[C]
Fluoride (EPA 340.2)	Cool to 4°C.	One - 100 ml plastic jar	28 days
Residual Chloride (SM408A)	Cool to 4°C.	Use same container as for Fluoride (EPA 340.2)	Analyze immediately
Nitrogen, Ammonia (EPA 350.1)	H_2SO_4 to pH <2; Cool to 4°C.	One - 250 ml plastic jar	28 days
Nitrogen, Kjeldahl, Total (EPA 351.2)	H_2SO_4 to pH <2; Cool to 4°C.	Use same container as for Nitrogen, Ammonia (EPA 350.1)	28 days
Nitrogen, Nitrate-Nitrite (EPA 353.2)	H_2SO_4 to pH <2; Cool to 4°C.	Use same container as for Nitrogen, Ammonia (EPA 350.1)	28 days
Nitrogen, Organic (EPA 351.2/EPA350.1)	H_2SO_4 to pH <2; Cool to 4°C.	Use same container as for Nitrogen, Ammonia (EPA 350.1)	28 days
Phosphorus, Total (EPA 365.4)	H_2SO_4 to pH <2; Cool to 4°C.	Use same container as for Nitrogen, Ammonia (EPA 350.1)	28 days
Chemical Oxygen Demand (EPA 410.2)	H_2SO_4 to pH <2; Cool to 4°C.	One - 100 ml plastic jar	28 days
Phenolics, Total Recoverable (EPA 420.2)	H_2SO_4 to pH <2; Cool to 4°C.	One - 125 ml amber glass jar	28 days
Organochlorine Pesticides and PCBs (EPA 608)	Cool to 4°C.	One - 1L amber glass jar	Extract within 7 days of collection; analyze within 40 days of extraction
Polynuclear Aromatic Hydrocarbons (EPA 610)	Cool to 4°C.	One - 1L amber glass jar	Extract within 7 days of collection; analyze within 40 days of extraction

TABLE 2.2 (Continued)

SUMMARY OF SAMPLE PRESERVATION METHODS, SAMPLE CONTAINERS, REQUIRED SAMPLE VOLUMES, AND HOLDING TIMES NOVEMBER-DECEMBER, 1993 STORM WATER SAMPLING EFFORT ROBINS AFB, GEORGIA

Analytical Method	Preservation Method[A]	Number of Sample Containers, Sample Volumes, and Type of Sample Container[B]	Holding Time[C]
Base/Neutrals and Acids (EPA 625)	Cool to 4°C.	Two - 1L amber glass jar	Extract within 7 days of collection; analyze within 40 days of extraction

(A) Sample preservation for grab samples was performed immediately upon sample collection. For the composite samples, sample preservation was performed at the time that aliquots of the composite sample were poured into each sample container; this occurred after composite sample was completed.

(B) Sample volumes do not include the additional volumes that were required for MS/MSD samples.

(C) All holding times were determined from the date and time of sample collection.

(D) The true holding time for fecal coliform analysis is 6 hours. However, since meeting this holding time is considered impractical for the laboratory analysis of most field environmental samples, fecal coliform analytical data is considered acceptable for samples analyzed within 30 hours of sample collection.

Supplies used during the sample packaging portion of the sampling effort included:

- temperature blanks (provided by the laboratory - for placement in shipping coolers);
- Teflon® and plastic tapes for wrapping sample containers;
- polynet and bubble plastic to protect glass sample containers;
- plastic zip-lock bags for enclosing sample containers and ice;
- plastic bags for lining shipping coolers;
- ice for cooling sample containers;
- shipping coolers and cardboard boxes to contain coolers (provided by the laboratory);
- chain-of-custody forms;
- custody seals for shipping; and
- clear plastic tape for sealing shipping boxes.

2.2.3 Field Test Kit For Free and Total Chlorine

The field test kit for free and total chlorine was a Hach® Model CN-66T test kit. This kit contained all the supplies required to conduct this test. The test enabled the field personnel to measure free and total chlorine in water samples. As indicated earlier in this report, this field test was applied to the four composite samples that were collected during the December 4 rain event.

2.2.4 Rain Gauge

A portable rain gauge with 0.1 inch divisions was used for measuring the amount of rainfall which accumulated during each of the two rain events. Before each of the two rain events, the empty rain gauge was placed vertically on the open ground near a selected sampling location and allowed to collect precipitation.

2.3 DECONTAMINATION PROCEDURES

As described in Section 2.2.1 of this report, certain sampling equipment required rigorous decontamination before use or reuse. These items included the 1-L sampling jars, the sampling booms, the 10-L composite sample jars, and the tubing assemblies and Teflon®-wrapped rubber stoppers that were attached to the 10-L composite sample jars. This section describes the procedures that were used to decontaminate this equipment before the sampling effort.

Nonpermeable gloves were worn by the field personnel during all decontamination procedures. The general procedure for decontaminating the sampling equipment was as follows:

1. Clean equipment with tap water and laboratory-grade detergent, using a brush if necessary to remove particulate matter and surface films.
2. Rinse equipment thoroughly with tap water.
3. Rinse equipment thoroughly with deionized water.
4. Rinse equipment twice with methanol.
5. Rinse equipment thoroughly with organics-free (HPLC-grade) water and allow the equipment to air dry.
6. Place equipment in plastic bags for storage until used during sampling operations.

A few deviations from the general decontamination procedure should be noted. During some decontamination operations, the methanol rinse consisted of simply rinsing the equipment once thoroughly with methanol. While this method of rinsing did not follow the requirement given above of rinsing the equipment twice with methanol, it is considered acceptable. In addition, during the decontamination operations of the sampling equipment that was used for the November 5 rain event, deionized water was not available. Therefore, the deionized water rinse step of the general decontamination procedure given above was not carried out. The deionized water rinse step was carried out during decontamination operations of the sampling equipment that was used for the December 4 rain event.

Another deviation from the general decontamination procedure should also be noted. For the 10-L composite sample jars that were used during the November 5 rain event, the final organic-free (HPLC-grade) water rinse was performed on the jars after the tubing assemblies had been attached to the nipples of the jars. (These tubing assemblies had already been completely decontaminated before its attachment to the jars.) Detergent or other residue remaining in the composite sample jars before this final rinse may have been deposited in the tubing assemblies during the rinse. Therefore, the tubing assemblies may have become contaminated with detergent or other residues.

To remedy this potential source of contamination for the composite samples, the sampling personnel were instructed to rinse each composite sample jar with a single 1-L sample aliquot immediately before adding the first true aliquot of composite sample to composite sample jar. This rinse was performed at the start of the sampling operations conducted during the November 5 rain event. There was no risk of contaminating these tubing assemblies with detergent or other residues for the December 4 rain event because the 10-L composite sample jars were final rinsed during decontamination activities with organic-free (HPLC-grade) water before the tubing assemblies were attached to the nipples of the jars. Therefore, the sample rinse of the composite jars and their tubing assemblies conducted in the field during the November 5 rain event was not required during the December 4 rain event.

Several other details about the decontamination procedures of certain items should be mentioned. When decontaminating the sampling booms, only the ends of the booms to which the 1-L sampling jars were attached were decontaminated. Before the

November 5 rain event, the rubber stoppers were decontaminated as described earlier in this section. They were then dried with paper towels, and wrapped in Teflon® tape until their surfaces were completely covered. The Teflon® tape was used to prevent the rubber from potentially contaminating the composite samples when the stoppers were placed over the openings of the 10-L composite sample jars during sampling. During the period between the November 5 rain event and the December 4 rain event, these rubber stoppers were decontaminated again. The old Teflon® tape was removed and discarded, the stoppers were decontaminated as described earlier in this section, and new Teflon® tape was used to rewrap the stoppers. These stoppers were then used during the December 4 rain event.

Finally, before the November 5 rain event, the tubing assemblies were decontaminated in the following way. The disassembled pieces of each tubing assembly were decontaminated as described earlier in this section. These pieces consisted of lengths of Tygon® and Teflon® tubing. After decontamination, the pieces of tubing were assembled using Teflon® tape as a sealing material at the interfaces between the Tygon® and Teflon® tubing pieces. During the period between the November 5 rain event and the December 4 rain event, these tubing assemblies were decontaminated again. The tubing assemblies were completely disassembled, and the old Teflon® tape was removed and discarded. The pieces of Tygon® and Teflon® tubing were then decontaminated as described earlier in this section, and were reassembled using new Teflon® tape as a sealing material at the interfaces of the Tygon® and Teflon® tubing pieces. These tubing assemblies were then used during the December 4 rain event.

The field test kit for measuring free and total chlorine required minimal decontamination. Before adding a water sample to the test kit sample tubes, these sample tubes were rinsed with tap water and dried with a towel.

The rain gauge required no decontamination during the sampling effort.

SECTION 3
SAMPLING EVENTS

This section describes the conditions of each of the two rain events, the associated sampling data and the sampling procedures employed.

3.1 DESCRIPTION OF RAINFALL EVENTS

Table 3.1 provides information concerning the two rainfall events. This table indicates that each of the two rain events during which sampling occurred achieved the 0.1 inch rain accumulation requirement as given earlier in this report (Section 1.1). In addition, the two rain events occurred beyond the 72-hour minimum duration for the time between each rain event and the previous measurable rain event. Finally, it should be noted that, for the November 5 rain event, field personnel indicated that a mist-like precipitation began at some time prior to midnight on November 4th. The rain event start time given in Table 3.1 for this particular rain event, however, indicates the approximate time when the mist progressed into a steady rain.

3.2 SAMPLE COLLECTION INTERVALS

Table 3.2 provides sampling times and other related data for the sampling effort. The data in this table addresses specific criteria for the collecting of grab samples and composite samples (as given in Section 1.1 of the report). As indicated in Table 3.2, sampling began at a location after flow was observed at the location. While it was difficult for sampling personnel assigned to more than one sampling location to monitor the exact time when flow began at each sampling location, the sampling personnel were able to satisfy the requirement that all grab samples be collected during the first 30 minutes of the discharge.

Two of the requirements for the collecting of composite samples are as follows: (1) composite samples must be accumulated from each sampling location at a minimum rate of 3 discrete sample aliquots per hour and (2) the discrete sample aliquots must be separated in time from one another by a minimum of 15 minutes. The project team followed these requirements during sampling, and collected sample aliquots for the composite samples at equal time intervals of approximately 20 minutes during the compositing period.

The sampling times for the composite sample aliquots given in Table 3.2 for each sampling location show that all sample aliquots were spaced in time at intervals of at least 15 minutes. Most of the composite sampling intervals varied between 20-25 minutes in duration; some composite sampling intervals were as low as the minimum 15 minute duration.

TABLE 3.1

RAIN EVENT DATA FOR THE NOVEMBER-DECEMBER 1993 STORM WATER SAMPLING EFFORT ROBINS AFB, GEORGIA

	November 5th, 1993 Rain Event	December 4th, 1993 Rain Event
Date/time of the end of the previous measurable rain event.	October 30, 1993 at 2:00 P.M.	November 27, 1993 at 10:00 A.M.
Time duration between previous measurable rain event and the rain event.	130 hr.	178.25 hr.
Rain event start date/time.	November 5, 1993, near 12:00 midnight	December 4, 1993 at 8:15 P.M.
Rain event stop date/time.	November 5, 1993 at 3:01 A.M.	December 4, 1993 at 9:45 P.M.
Rain event duration.	3 hr.	1.5 hr.
Location of rain gauge during rain event.	Sampling Location 4	Sampling Location 10
Total rainfall amount during rain event, as measured with rain gauge.	0.5 in.	0.45 in.
Estimates of total volumes of discharges through drainage area.	Sampling location 1: 350,000 gal 2: 124,000 gal 3: 5,283,000 gal 4: 460,000 gal 5: 810,000 gal 6: 2,082,000 gal 7: 14,500 gal 8: 2,490,000 gal	Sampling Location 9: 1,482,000 gal 10: 4,200,000 gal 11: 3,372,000 gal 12: 115,000 gal

TABLE 3.2

SAMPLING TIMES AND OTHER DATA FOR THE NOVEMBER-DECEMBER 1993 STORM WATER SAMPLING EFFORT ROBINS AFB, GEORGIA

	Sampling Locations, November 5, 1993 Rain Event								Sampling Locations, December 4, 1993 Rain Event			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Name of sampling personnel at each sampling location	Geoffrey Albert	Geoffrey Albert	Alan Bollinger	Alan Bollinger	Alan Bollinger	Erich Stedman	Erich Stedman	Brian Jeter	Alan Bollinger	Alan Bollinger	Geoffrey Albert	Alan Bollinger
Criteria used to determine when to begin sampling at each sampling location.	All sampling locations: after flow was observed at the discharge of a sampling location, sample collection was started.											
Criteria used to determine when to end sampling at each sampling location	For the sampling locations sampled during the November 5, 1993 rain event: the duration of the rain event was approximately 3 hr. Hence, sampling at each sampling location was stopped approximately 3 hr after sampling began.								For the sampling locations sampled during the December 4, 1993 rain event: the duration of this rain event was only 1.5 hr. Hence, sampling at each sampling location was stopped near the end of the rain event.			
Sampling location where field duplicate (FD) samples were collected						FD				FD		
Sampling location where MS/MSD samples were collected						MS/MSD				MS/MSD		

TABLE 3.2 (Continued)

SAMPLING TIMES AND OTHER DATA FOR THE NOVEMBER-DECEMBER 1993
STORM WATER SAMPLING EFFORT
ROBINS AFB, GEORGIA

	Sampling Locations, November 5, 1993 Rain Event								Sampling Locations, December 4, 1993 Rain Event			
	1	2	3	4	5	6	7	8	9	10	11	12
Sampling date at each sampling location	11/5/93	11/5/93	11/5/93	11/5/93	11/5/93	11/5/93	11/5/93	11/5/93	12/4/93	12/4/93	12/4/93	12/4/93
Sampling time for the grab sample collected at each sampling location	12:00 A.M.	12:30 A.M.	1:00 A.M.	12:48 A.M.	12:35 A.M.	12:15 A.M.	12:50 A.M.	1:05 A.M - 1:20 A.M.	8:45 P.M.	8:55 P.M.	8:45 P.M.	8:30 P.M.
Sampling times for the composite sample aliquots collected at each sampling location.	12:20 A.M.	12:50 A.M.	1:00 A.M.	12:48 A.M.	12:35 A.M.	12:45 A.M.	1:00 A.M.	1:21 A.M.	8:50 P.M.	9:15 P.M.	8:55 P.M.	8:40 P.M.
	12:40 A.M.	1:10 A.M.	1:21 A.M.	1:10 A.M.	1:05 A.M.	1:10 A.M.	1:20 A.M.	1:41 A.M.	9:30 P.M.	9:35 P.M.	9:10 P.M.	9:25 P.M.
	1:00 A.M.	1:30 A.M.	1:41 A.M.	1:32 A.M.	1:25 A.M.	1:30 A.M.	1:40 A.M.	2:01 A.M.	9:50 P.M.	9:55 P.M.	9:25 P.M.	9:45 P.M.
	1:20 A.M.	1:50 A.M.	2:02 A.M.	1:53 A.M.	1:45 A.M.	1:50 A.M.	2:00 A.M.	2:21 A.M.	10:10 P.M.	10:15 P.M.	9:40 P.M.	10:05 P.M.
	1:40 A.M.	2:10 A.M.	2:25 A.M.	2:15 A.M.	2:10 A.M.	2:10 A.M.	2:20 A.M.	2:41 A.M.				
	2:00 A.M.	2:30 A.M.	2:45 A.M.	2:37 A.M.	2:32 A.M.	2:30 A.M.	2:40 A.M.	3:01 A.M.				

TABLE 3.2 (Continued)

SAMPLING TIMES AND OTHER DATA FOR THE NOVEMBER-DECEMBER 1993
STORM WATER SAMPLING EFFORT
ROBINS AFB, GEORGIA

	Sampling Locations, November 5, 1993 Rain Event								Sampling Locations, December 4, 1993 Rain Event			
	1	2	3	4	5	6	7	8	9	10	11	12
	2:20 A.M.	2:50 A.M.	3:05 A.M.	3:00 A.M.	2:55 A.M.	2:50 A.M.	3:00 A.M.	3:21 A.M.				
	2:40 A.M.	3:10 A.M.	3:25 A.M.	3:21 A.M.	3:15 A.M.	3:10 A.M.	3:20 A.M.	3:41 A.M.				
	3:00 A.M.	3:30 A.M.	3:45 A.M.	3:41 A.M.	3:35 A.M.	3:30 A.M.	3:40 A.M.	4:01 A.M.				
Total duration from the beginning to the end of the collecting of composite sample aliquots at each sampling location.	2 hr, 40 min	2 hr, 40 min	2 hr, 45 min	2 hr, 53 min	3 hr, 0 min	2 hr, 45 min	2 hr, 40 min	2 hr, 40 min	1 hour, 20 min	1 hour, 0 min	0 hour, 45 min	1 hour, 25 min
Total duration from the collection of the first (grab) sample to the end of the collecting of composite sample aliquots at each sampling location.	3 hr, 0 min	3 hr, 0 min	2 hr, 45 min	2 hr, 53 min	3 hr, 0 min	3 hr, 15 min	2 hr, 50 min	2 hr, 56 min	1 hour, 25 min	1 hour, 20 min	0 hr, 55 min	1 hour, 35 min

A small number of composite sampling intervals were somewhat higher, varying from 30-45 minutes in duration (observe in Table 3.2 the time intervals between the 1st and 2nd composite sample aliquots taken from Sampling Locations 5, 6, 9, and 12). Furthermore, taking three hours as the approximate duration of the composite sampling period, and nine composite sample aliquots as the number of aliquots collected at each sampling location during the November 5 rain event, calculation shows that approximately three sample aliquots were collected per hour during this rain event. In the same way, taking 1.5 hours as a rough approximation of the duration of the composite sampling period, and four composite sample aliquots as the number of aliquots collected at each sampling location during the December 4 rain event, calculation shows that roughly three sample aliquots were collected per hour during this rain event. Hence, with some minor exceptions, the composite sample aliquots collected at each sampling location during both the November 5 rain event and the December 4 rain event were collected according to the requirements given above and in Section 1.1 of this report.

With respect to the required duration of the composite sampling period, composite sample aliquots were collected during either the first three hours of discharge or for the entire discharge (for the rain event less than three hours). The November 5 rain event lasted approximately three hours. For this rain event, the sampling personnel collected composite sample aliquots at each sampling location for a period of approximately 3 hours starting from a time soon after flow was observed at the discharge of the sampling location. The December 4 rain event, however, lasted only approximately 1.5 hours. For this rain event, the sampling personnel collected composite sample aliquots at each sampling location for a period of time starting from a time soon after flow was observed at the discharge of the sampling location until the rain stopped falling.

For the November 5 rain event, the composite sample aliquots collected at each of the eight sample locations were all of the same volume, specifically, 1-L. For the December 4 rain event, fewer composite sample aliquots were collected than during the November 5 rain event because this second rain event was shorter. In order to collect a sufficient total quantity of composite sample to fill all of the sample containers for the required laboratory analyses, a larger volume of sample was collected for each composite sample aliquot during the December 4 rain event. A set of four composite sample aliquots were collected for each 10-L composite sample jar during the December 4 rain event. For each of these set of four composite sample aliquots, three aliquots had a volume of 2 L, and one aliquot had a volume of 3 L. The additional liter of sample added to the volume of one of the four composite sample aliquots was a result of an effort to ensure that sufficient volume had been collected to fill all of the required sample containers.

3.3 SAMPLING PROCEDURES

This section describes the specific sampling procedures that were used during the sampling effort. There are some differences between the procedures used during the November 5 rain event and those used during the December 4 rain event. These differences will be described in this section.

3.3.1 Mobilization to Sampling Locations and Set-Up

The sampling personnel mobilized to their respective sampling locations by vehicle where possible; however, some sampling locations could only be reached by foot. Vehicles were preferred as a means of providing dry cover for the sampling equipment during the rain event. The sampling equipment that was required at each sampling location included the items discussed in the following paragraphs.

One 1-L, wide-mouth, glass sampling jar with an attached metal wire handle was assigned to each sampling location during the two rain events. Plastic sampling booms were also assigned to those sampling locations where the booms were needed to assist in sample collection.

Also, delivered to each sampling location was a portable styrofoam cooler which contained a complete set of the lab-furnished (pre-preserved) sample containers that were required for collecting the grab sample (see Table 2.2 for a listing of these containers). Each cooler also contained enough ice to keep the grab samples cold during the sampling period. Note that at those sample locations where field duplicate samples and MS/MSD samples were collected, additional sets of grab sample containers were required (one additional set for a field duplicate sample and two additional sets for MS/MSD samples).

A 10-L glass composite sample jar, with a flexible tubing assembly attached to the jar's nipple and a Teflon®-wrapped rubber stopper covering the jar's top opening, was also brought to each sampling location. Each 10-L composite sample jar was placed inside of a plastic-lined cardboard box filled with ice, such that the composite sample would be kept cold over the course of the composite sampling period. Note that at those sample locations where field duplicate samples and MS/MSD samples were collected, additional 10-L composite sample jars were required (one additional 10-L composite sample jar for a field duplicate sample and two additional 10-L composite sample jars for MS/MSD samples).

Other support equipment and supplies were also brought to each sampling location during each of the two rain events. These supplies are described in Section 2.2.

3.3.2 General Procedures

All samples were collected manually. Nonpermeable disposable gloves were worn during all sampling operations where the handling of the sampling equipment or the samples was involved. Prior to the collection of each composite sample aliquot at a sampling location, the sampler removed his old gloves and put on new gloves. Also, if a sampler was assigned to collect samples at more than one location, the sampler removed his old gloves and put on a new gloves prior to going from one sampling location to the next.

At each sampling location, the 1-L jar was used to collect samples from the storm water discharge and disperse the samples to the grab sample containers and the 10-L composite sample jars. If the storm water discharge of the sampling location was within

physical reach for the sampler, volumes of samples were drawn from the discharge by holding the 1-L jar by the hand and dipping the jar into the discharge. However, in the event that the storm water discharge of the sampling location was beyond physical reach for the sampler, the 1-L jar was attached by its wire handle to the end of a plastic sampling boom. This sampling boom was used to dip the sampling jar into the storm water discharge and collect a volume of sample.

The 1-L sampling jar assigned to each sampling location was thoroughly rinsed in the sample location's storm water discharge prior to collecting the grab sample and prior to the collecting of each composite sample aliquot. The 1-L sampling jars were not decontaminated between the collecting of the grab samples and the composite samples or between the collecting of successive composite sample aliquots during a rain event. However, the 1-L sampling jars were laid on plastic in between the collecting of grab samples and composite samples and in between the collecting of successive composite sample aliquots during each rain event. This effort was made to ensure the 1-L sampling jar was not contaminated during the sampling operations.

During sampling, collection of a volume of sample in the 1-L sampling jar was made by pointing the opening of the 1-L sampling jar upstream. If a sampling boom was used, the boom was held out of the flow of the discharge. By using these techniques, contact between the outside of the 1-L sampling jar and the collected sample and between the sampling boom and the collected samples was minimized. These practices reduced the possibility of contamination of the collected sample volumes as a result of the sampling operations.

3.3.3 Grab Samples

For grab samples, once a sample volume was drawn from the storm water discharge, the sample volume was dispensed from the jar into the appropriate grab sample containers. More than one filled 1-L sampling jar was required to completely fill all of the grab sample containers for a single sample. Care was exercised in not overfilling the sample containers. Overfilling leads to the loss of the chemical preservatives contained in the sample containers. Once filled, the grab sample containers were immediately placed in the cooler containing ice to be kept cool.

3.3.4 Composite Samples

The 1-L sampling jar was used to collect composite sample aliquots from the storm water discharge and to dispense aliquots into the 10-L glass composite sample jars. Composite sample aliquots were collected at time intervals of roughly 20 minutes. During composite sampling, the 10-L composite sample jars were kept inside a plastic-lined cardboard box filled with ice to keep the composite samples cold during the compositing period. The Teflon-lined rubber stopper assigned to each 10-L composite sample jar was kept over the top opening of the 10-L composite sample jar when the jar was not being filled with a sample. This was done as a precaution to prevent rain or contamination from entering the 10-L composite sample jar.

Once the process of filling the 10-L composite sampling jar was completed, the jar was transported within its ice pack back to the field office. At the office, the composite sample contained within each 10-L composite sample jar was dispensed into composite sample containers. These composite sample containers were also provided by the lab. (See Table 2.2 for a listing of these containers.)

Just prior to dispensing samples from a 10-L composite sample jar into the composite sample containers, the 10-L composite sample jar was swirled or shaken in order to thoroughly mix the sample. Once this was done, the tubing assembly attached to the lower nipple opening of the 10-L composite sample jar was opened to dispense the sample into the composite sample containers. When filling the composite sample containers, care was again exercised not to overfill. Once filled, the composite sample containers were immediately placed in coolers containing ice to be kept cold.

3.3.5 Field Duplicate Samples

One field duplicate sample was collected during each of the two rain events. During the collecting of field duplicate samples, the original sample and its field duplicate were treated as separate, individual samples. For grab samples, two sets of grab sample containers were brought to the sampling location selected for the collection of the field duplicate sample. One set was utilized for the original sample and one set was used for its field duplicate. The two sets of grab sample containers were filled with sample in the following way. All of the grab sample containers which corresponded to a particular grab sample analytical method were filled all at once; one sample container was completely filled prior to proceeding to fill the next one. Once all of the sample containers for that analytical method were filled, the sample containers corresponding to the remaining grab sample analytical methods were filled one at a time in the same way, until all of the grab sample containers were filled.

For the composite samples, two 10-L composite sample jars were brought to the sampling location chosen for the collection of the field duplicate sample. One jar was utilized for the original sample and one jar was used for its field duplicate. When collecting the composite sample aliquots for these two jars, each of the two 10-L composite sample jars was filled with separate volumes of sample (the 1-L sampling jar was used to dispense a complete composite sample aliquot into one of the 10-L composite sample jars, and then the 1-L sampling jar was used to dispense a complete composite sample aliquot into the second 10-L composite sample jar).

The field duplicate samples collected during the sampling efforts were assigned coded sample names so that the laboratory could not identify the original sample that corresponded to each field duplicate sample. During the November 5 rain event, grab sample RAFB-SL16-G-E1 was the coded field duplicate of grab sample RAFB-SL6-G-E1, and composite sample RAFB-SL16-C-E1 was the coded field duplicate of composite sample RAFB-SL6-C-E1. During the December 4 rain event, grab sample RAFB-SL13-G-E1 was the coded field duplicate of grab sample RAFB-SL10-G-E1, and composite sample RAFB-SL13-C-E1 was the coded field duplicate of composite sample RAFB-SL10-C-E1.

3.3.6 MS/MSD Samples

During the collecting of an MS/MSD sample, the original sample volume, the MS sample volume, and the MSD sample volume were treated as the same identical sample. All three sample volumes corresponding to these samples were collected at the same time and in such a way that all three sample volumes have identical physical and chemical compositions. (If the field duplicate sample and MS/MSD sample are collected from the same sampling location during a rain event, only one original sample volume needs to be collected to serve as the mate to both the field duplicate and the MS/MSD. In other words, only four sample volumes need to be collected: one volume to serve as the original sample, one volume to serve as the field duplicate sample, and two volumes to serve as the MS/MSD sample.)

One MS/MSD sample was collected during each of the two rain events. For grab samples, three sets of grab sample containers were brought to the sampling location chosen for the collection of MS/MSD samples. One set was for the original sample volume and two sets were for the MS/MSD sample volumes. The following procedure was used during the November 5 rain event for dispensing grab sample volumes into these three sets of grab sample containers during the grab sampling operations. During grab sampling, equal portions of the 1-L sampling jar-full were poured into all three sets of sample containers. More specifically, the three sets of sample containers corresponding to each specific laboratory analytical method were filled together using equal portions of the same 1-L volume of sample contained in the 1-L sampling jar (e.g., all nine 40-ml glass vials for the purgeable organics analysis were filled all at once, followed by filling all three 100-ml plastic jars for the pH analysis all at once, etc.) If more than one volume of the 1-L sampling jar was required to fill all three sets of sample containers corresponding to a specific analytical method, each of the two or more 1-L sampling jars-full that were needed were equally apportioned among the sample containers until all containers were filled.

For the December 4 rain event, the three sets of grab sample containers were filled in the following way. All of the grab sample containers for all three sets which corresponded to a particular grab sample analytical method were filled all at once, one sample container being completely filled prior to going on to fill the next one. Once all of the sample containers for that analytical method were filled, the sample containers corresponding to each of the remaining grab sample analytical methods were filled. Because it required more than one 1-L sampling jar-full to completely fill the three sets of grab sample containers corresponding to each of at least two of the grab sample analytical methods, this procedure may have resulted in differences in physical and chemical composition between the sample volumes corresponding to each of the three sets of grab sample containers corresponding to each grab sample analytical method. Hence, for the December 4 rain event, the sample volumes used to make up the two MS/MSD grab samples may not have been physically or chemically identical. In addition, the sample volumes used to make up the grab of the original sample may have differed in physical and chemical composition from the sample volumes used to make up its MS/MSD grab sample pair. Also, for those grab sample analytical methods where more than one grab sample container was required to complete a single sample's set of

containers, differences in physical and chemical composition may have also existed among the individual, discrete sample volumes within each of the three sets (MS, MSD, and original sample sets) of sample containers corresponding to a particular grab sample analytical method. The differences in physical and chemical composition described here, however, are expected to be minimal in that all three sets of grab sample containers were filled with 1-L sampling jars-full of sample that were collected from the sample location's storm water discharge at close to the same time.

For composite samples, three 10-L composite sample jars were brought to the sample location chosen for the collection of the MS/MSD sample. One jar was for the original sample volume and the other two jars were for the MS/MSD sample volumes. The following procedure was used during the November 5 rain event for dispensing composite sample aliquots into these three 10-L composite sample jars during a typical 20-minute composite sampling interval. During composite sampling, once the 1-L sampling jar had been used to collect a 1-L volume of sample from the sampling location's storm water discharge, equal portions of the 1-L sampling jar-full were poured into all three 10-L composite sample jars. More specifically, all three 10-L composite sample jars were filled together using equal portions of the same 1-L volume of sample contained in the 1-L sampling jar. Since each 10-L composite sample jar required at least 1 liter of sample for each of the composite sample aliquots the jar received, more than one volume of the 1-L sampling jar were required to fill the three 10-L composite sample jars with one complete composite sample aliquot each. Each of the three or more 1-L sampling jars-full that were needed were therefore equally apportioned among the three 10-L composite sample jars.

For the December 4 rain event, the following procedure was used for dispensing composite sample aliquots into the three 10-L composite sample jars during a typical 20-minute composite sampling interval. For this rain event, each of the three 10-L composite sample jars was filled with separate 1-L sampling jars-full of sample. Hence, each of the three 10-L composite sample jars contained individual samples which may not have been physically and chemically identical to each other. Later, when dispensing sample from these three 10-L composite sample jars into the sample containers corresponding to the laboratory analytical methods chosen for the composite samples, the sample containers for the original sample and the sample containers for the MS/MSD sample were filled entirely from two of the three 10-L composite sample jars. Because two 10-L composite sample jars (each jar containing an individual composite sample which may not have been physically or chemically identical to the other jar's sample) were used to dispense sample into the sample containers for both the original sample and the MS/MSD sample, the sample volumes used to make up the two MS/MSD composite samples may not have been physically or chemically identical. In addition, the sample volumes used to make up the composite of the original sample may have differed in physical and chemical composition from the sample volumes used to make up its MS/MSD composite sample pair. Also, for those composite sample analytical methods where more than one composite sample container was required to complete a single sample's set of containers, differences in physical and chemical composition may have also existed among the individual, discrete sample volumes within each of the three sets

(MS, MSD, and original sample sets) of sample containers corresponding to a particular composite sample analytical method. The differences in physical and chemical composition described here, however, are expected to be minimal in that all three 10-L composite sample jars were filled with composite sample aliquots that were collected from the sampling location's storm water discharge at close to the same time.

As given in Table 3.2, for the November 5 rain event the MS/MSD sample was collected at Sampling Location 6. For the December 4 rain event, the MS/MSD sample was collected at Sampling Location 10.

3.3.7 Trip Blanks

The trip blanks were only analyzed for purgeable organics (EPA Method 624). This analytical method was applied only to the grab samples collected during this sampling effort. The following procedures were used for handling trip blanks during the sampling operations. While collecting the grab samples during the November 5 rain event, the trip blanks were taken into the field to accompany the grab sample containers used for the purgeable organics analysis. During the December 4 rain event, the trip blanks did not accompany into the field the grab sample containers used for purgeable organics analysis. During both rain events, the trip blanks did accompany the grab sample containers used for purgeable organics analysis during the period prior to mobilization into the field for sampling. And, as required, the trip blanks of each of the two rain events accompanied the sample-filled grab sample containers designated for purgeable organics analysis during the shipment of these sample containers to the laboratory.

3.3.8 Field Notes

During the sampling effort, the sampling personnel recorded various notes during sampling operations, including: sample location number, dates and times for the collection of grab samples and composite sample aliquots, location of portable rain gauge during sampling, rain accumulation during each rain event, beginning and ending times of each rain event, sample locations chosen for the collection of field duplicate samples and MS/MSD samples, coded names for the field duplicate samples, and the volumes of sample collected for each composite sample aliquot.

3.3.9 Other Important Sampling Procedures

Several of the sample containers which were used to store and ship samples to the laboratory required special filling procedures. While most sample containers were filled to nearly full (where some air space, or, headspace was allowed to exist inside the filled containers), some containers had to be completely filled such that little or no headspace remained inside these containers once their caps had been sealed. Sample containers that required complete filling with sample included the sample containers for the following methods of analysis: total recoverable oil and grease (EPA Method 413.2), total recoverable phenolics (EPA Method 420.2), organochlorine pesticides and PCBs (EPA Method 608), polynuclear aromatic hydrocarbons (EPA Method 610), and base/neutrals and acids (EPA Method 625). In addition, the 40-mL vials used to collect grab samples

for the purgeable organics analysis (EPA Method 624) were required to be filled up completely such that no air bubbles existed inside of the filled vials once their caps had been sealed.

Once the grab sample containers had been transported back to the field office from the sampling locations and the composite sample containers had been filled from their 10-L composite sample jars, sample container lids were sealed with either plastic adhesive tape or with Teflon® tape. The Teflon® tape was used to wrap the seals of those sample containers associated with the following analytical methods: purgeable organics (EPA Method 624), total recoverable oil and grease (EPA Method 413.2), total recoverable phenolics (EPA Method 420.2), organochlorine pesticides and PCBs (EPA Method 608), polynuclear aromatic hydrocarbons (EPA Method 610), and base/neutrals and acids (EPA Method 625). The lids for the sample containers for all other analytical methods were wrapped with plastic adhesive tape.

3.3.10 Sample Documentation and Packaging Procedures

In addition to the field notes that were recorded during the sampling operations, other documentation was recorded for samples to be properly identified and to maintain proper chain of custody over the samples. Each grab sample that was collected from a particular sample location was given a unique sample designation such that it could be easily distinguished from all other samples. In the same way, each composite sample that was collected from a particular sample location was also given a unique sample designation. The sample designation scheme used for both grab samples and composite samples during the sampling effort was as follows:

		Sample		Sample		Sampling
RAFB	-	Location	-	Type	-	Effort
		Number		Identifier		Number

where RAFB stood for Robins Air Force Base; the sample location number indicated from which sample location the sample was collected; the sample type identifier indicated whether the sample was a grab (G) sample or a composite (C) sample; and the sampling effort number indicated the sampling effort during which the sample was collected (for the sampling effort the sampling effort number was E1). Examples of sample designations used during the sampling effort are as follows:

RAFB-SL3-C-E1.	This sample designation identifies a composite sample collected from Sample Location 3 at RAFB during the sampling effort.
RAFB-SL12-G-E1	This sample designation identifies a grab sample collected from Sample Location 12 at RAFB during the sampling effort.

The field duplicate samples collected during the sampling effort were given coded sample designations. These coded sample designations followed the scheme given in the previous paragraph; the coded sample designations for these field duplicate samples and the sample locations from which they were collected are given in Section 3.3.5 of this report. MS/MSD samples were designated using the sample designation scheme given in the previous paragraph; however, on the MS/MSD sample container labels and on their corresponding chain-of-custody forms, the designation "MS/MSD" was written such that these sample containers could be identified as the MS/MSD samples. Trip blank samples were given special designations. The trip blank used during the November 5 rain event was designated RAFB-TB-1-G-E1. The trip blank used during the December 4 rain event was designated RAFB-TB2.

All grab sample containers and all composite sample containers had labels attached to them which enabled the following information to be recorded upon them: sample designation, sample collection date and time(s), name of sampling personnel, name of the analytical method to which the sample container is assigned, and the chemical preservative used. Once each sample container label was filled out, it was covered over in clear plastic tape such that the writing on the label would not smear or run.

Chain-of-custody (COC) forms were filled out for all grab sample containers and composite sample containers prior to the shipment of these containers to the laboratory. A COC form was filled out to record the contents of each shipping cooler that was shipped to the laboratory. Within each cooler were sets of varying numbers of grab sample containers and/or composite sample containers.

Information that was written on each COC form included: project name, names of sampling personnel and sample handling personnel, sample designations for those grab sample containers and composite sample containers that were shipped in the cooler with which the COC form was associated, the sample collection dates and times for these grab sample containers and composite sample containers, the numbers of grab sample containers and composite sample containers stored in the shipping cooler, the analytical methods to which the grab sample containers and composite sample containers were assigned, the methods of chemical preservation that were used in the various grab sample containers and composite sample containers, the sample type (grab or composite) of the sample containers in the cooler, the sample matrix type (e.g., water, soil, etc.) of the samples, and any special remarks (such as notes identifying the sample containers that were designated as MS/MSD samples). The COC forms also provided the name and address of the laboratory to which the shipping coolers were sent. Finally, the COC forms provided spaces for those personnel relinquishing custody and those personnel receiving and assuming custody of the sample containers to sign their names and provide the date and time of transfer of custody whenever the sample containers changed hands. By filling out these particular spaces on the COC forms, an unbroken chain-of-custody, or, paper trail was maintained such that tampering with the samples was prevented. This chain-of-custody procedure also ensured that the disposition of the sample containers could be traced from the time of sample collection to the receipt of the sample containers at the laboratory.

Figures 3.1 and 3.2 give examples of the COC forms used during the sampling effort. Field teams used COC forms provided by both the laboratory as well as by Engineering-Science.

Copies of the COC forms that accompanied the shipping coolers that were sent to the laboratory were kept for filing in record files. The original copies of all COC forms were sent with the shipping coolers to the laboratory. When the samples were received by the laboratory, the COC forms accompanying the samples were filled out by the lab personnel to show that the samples were received into the custody of the lab. These completed COC forms were returned as a part of each data package that was prepared by the laboratory.

Prior to shipment, sample containers (both grab and composite) were carefully packaged to prevent breakage during shipment. In particular, the glass sample containers were wrapped in bubble plastic. All sample containers were enclosed within plastic zip-lock bags to be kept dry and protected from possible contamination during shipment. The sample containers were then packed inside of their shipping coolers. Ice was added to the coolers to keep the sample containers cold during shipment. Trip blanks were placed in those shipping coolers which contained grab sample containers that were to be analyzed for purgeable organics (EPA Method 624). Temperature blanks (used by the lab to measure the approximate sample temperatures upon receipt of the samples at the lab) were also included in most shipping coolers which contained sample containers.

The COC forms assigned to each shipping cooler were filled out, signed, and dated by the sampling personnel, placed inside a sealed plastic zip-lock bag, and placed inside of each shipping coolers. (For each shipping cooler, the COC forms that accompanied that cooler were those COC forms which recorded the exact contents of that cooler.) The shipping coolers were then closed. Custody seals were placed on opposite corners of each shipping cooler such that they covered the lid seam of the cooler. Clear plastic tape was then wrapped around the lid of each shipping cooler such that the custody seals were taped over and the lid seam of the cooler was completely sealed.

All shipping coolers were enclosed in cardboard shipping boxes and then shipped by overnight delivery to the laboratory (Savannah Laboratories and Environmental Services, Inc.). Copies of the airbills and other shipping documentation were kept by the field personnel for storage in record files.

ENGINEERING-SCIENCE
CHAIN OF CUSTODY RECORD

1215

ES JOB NUMBER: AA002.03

PROJECT NAME\LOCATION: Robins AFB, Warner-Robins, Ga

SAMPLER(S): (Signature) Alan Ballinger

PRESERVATIVE REQUIRED: HCL, HCL, NaOH, 4°C, H2SO4

ANALYSES REQUIRED: EPA 601/602, EPA 624, Cyanide, PH, Oil + Grease

SHIP TO: Savannah Labs, 5102 La Roche Ave., Savannah, Ga 31404

Date	Time	Sample Description	Number of Containers	EPA 601/602	EPA 624	Cyanide	PH	Oil + Grease	Sample Type	Matrix	Remarks
11-5-93	1435	RAFB-SLS-G-E1	4			X	X	X	(G) C	W	
									G C	W	
									G C		
									G C		
									G C		
									G C		
									G C		
									G C		
									G C		
									G C		
									G C		
									G C		
									G C		
									G C		
									G C		
									G C		
									G C		
									G C		

Relinquished by: (Signature)	Date/Time		Received for Laboratory by:	Date/Time		Remarks:
[illegible]	11-5-93	1700	L Baker 46283	11/6/93	1210	Airbill#: 8446485234

Distribution: Original, yellow and pink sheets sent to lab. Gold retained by field personnel. Lab retains original and sends yellow and pink copies with analytical report.

G - Grab
C - Composite

Figure 3.1

Figure 3.2

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

☒ 5102 LaRoche Avenue, Savannah, GA 31404 — Phone: (912) 354-7858 — Fax (912) 352-0165
☐ 2846 Industrial Plaza Drive, Tallahassee, FL 32301 — Phone: (904) 878-3994 — Fax (904) 878-9504
☐ 414 Southwest 12th Avenue, Deerfield Beach, FL 33442 — Phone: (305) 421-7400 — Fax (305) 421-2584
☐ 900 Lakeside Drive, Mobile, AL 36693 — Phone: (205) 666-6633 — Fax (205) 666-6696
☐ 6712 Benjamin Road, Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 — Fax (813) 885-7049

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER:
PROJECT NUMBER: AA002.03
PROJECT NAME: Robins AFB
PAGE 1 OF 2

CLIENT NAME: Engineering-Science
TELEPHONE/FAX NO.: (404) 235-2400
CLIENT ADDRESS: 57 Executive Park, South NE
CITY, STATE, ZIP CODE: Atlanta Ga 30329
SAMPLER(S) NAME(S): Alan Bollinger
CLIENT PROJECT MANAGER: Alan Bollinger

☒ STANDARD TAT
☐ EXPEDITED TAT *
REPORT DUE DATE ________
* SUBJECT TO RUSH FEES

MATRIX TYPE: AQUEOUS MATRIX / NONAQUEOUS MATRIX / OIL MATRIX / AIR MATRIX

REQUIRED ANALYSES / NUMBER OF CONTAINERS SUBMITTED

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	~~EPA 601/602~~ SPK	~~EPA 624~~ SPK	COD (410.1)	Flouride (340.2)	FC-MF (SM9221-C)	Penols (420.1)	Metals (200.7, 239.2)	BOD/TSS/TDS (405.1, 160.2, 160.4)	~~pH~~ SPK	~~Oil/Grease~~ SPK
11-5-93	2435	RAFB-SL5-C-E1	X				~~2~~ SPK	~~2~~ SPK	1	1	1	1	1	1	~~1~~ SPK	~~2~~ SPK

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
[signature]	10/15	[illegible]	[signature]	10/18	1000	[signature]	11-5-93	1700
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

FOR SAVANNAH LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.
J Baker	11/6/93	12:20	☑ YES ☐ NO		46283

LABORATORY REMARKS

3.3.11 Rain Gauge Operating Procedures

Portable rain gauges were used to measure the amount of rainfall which accumulated during each of the two rain events. To operate, the gauges were emptied of any accumulation of water prior to the start of the measurement period. The gauges were then placed vertically on the open ground near a sampling location and allowed to collect precipitation. Field personnel monitored the rate of accumulation by reading the level of water in the gauge against the scale printed on the gauge. Each scale had 0.1 inch divisions. Table 3.1 gives the sample locations where the rain gauges were set up during each of the rain events.

3.3.12 Field Test Kit for Free and Total Chlorine, Operating Procedures

The field test kit for measuring free and total chlorine in water samples was used only during the December 4 rain event. Measurements using the kit were conducted on the composite samples after the sample compositing period was completed and the 10-L composite sample jars were transported back to the field office. At the field office, portions of samples from each 10-L composite sample containers chosen for measurement by this method were dispensed into the sample tubes provided with the test kit. The operating instructions for the test kit were followed in order to perform the test for free and total chlorine on each sample. The test kit required no additional equipment in order for the test to be performed. The results from the conducting of this field test on the composite samples collected during the December 4 rain event are presented in Section 4 of this report.

SECTION 4
ANALYTICAL RESULTS

Aside from the use of a Hach® field test kit for the analysis of composite water samples for free and total chlorine during the December 4, 1993 rain event, all analyses were performed at Savannah Laboratories and Environmental Services, Inc., Savannah, Georgia. The results of the field test for free and total chlorine will be presented in the later portion of this section along with the data tables containing the validated laboratory analytical results. The first part of this section will present the laboratory data packages that were sent to Engineering-Science by the laboratory.

4.1 PRESENTATION OF LABORATORY DATA PACKAGES

Attachment A of this report contains two data packages of analytical results: one package for the analysis of the samples collected during the November 5 rain event and one package for the analysis of the samples collected during the December 4 rain event. These packages contain originally submitted pages of the results, as well as revised pages which were submitted to Engineering-Science personnel during their data checking and data validation activities.

The contents of the data packages given in Attachment A conform to the Savannah Laboratories QC Reporting Level II deliverable format. The data in each package contain the following general information: sample analytical results for both the grab samples and composite samples, the field duplicate analytical results (grab and composite), trip blank analytical results (EPA method 624), method blank analytical results, laboratory control standard and laboratory control standard duplicate (LCS/LCS Duplicate) results including percent recovery values and relative percent difference values, MS/MSD results including percent recovery values and relative percent difference values, and copies of the COC forms which accompanied the samples. For both data packages, the results for all samples, field duplicate samples, trip blanks, method blanks, LCS/LCS duplicate samples, and the MS/MSD samples include surrogate spike results (percent recoveries). For both data packages, the results for all samples, field duplicate samples, and trip blank samples include the sampling dates. The results for all samples, field duplicate samples, trip blank samples, and method blanks also include the analysis dates. In addition, the results for all samples, field duplicate samples, and method blanks include the extraction dates for the results of all applicable analytical methods (EPA methods 608, 610, and 625).

4.2 PRESENTATION OF DATA VALIDATION RESULTS

Attachment B contains two data validation report packages: one corresponding to the data validation of the laboratory data package for the analysis of samples collected during the November 5 rain event and one corresponding to the data validation of the laboratory data package for the analysis of samples which were collected during the December 4 rain event.

Each of the two data validation report packages given in Attachment B includes individual data validation reports for the following methods of analysis: purgeable organics (EPA method 624), base/neutrals and acids (EPA method 625), polynuclear aromatic hydrocarbons (EPA method 610), organochlorine pesticides and PCBs (EPA method 608), and total metals (Cd, Cr, Cu, Ni, Ag, Zn, Pb) by ICP and Furnace AA (EPA methods 200.7 and 239.2). In addition, there is a data validation report for each of the two packages which combines the data validation results of the following analytical methods: total cyanide (EPA method 335.3), pH (EPA method 150.1), and total recoverable oil and grease (EPA method 413.2). Finally, there is a data validation report for each of the two packages which combines the data validation results of the following analytical methods: chemical oxygen demand (EPA method 410.2), fluoride (EPA method 340.2), residual chlorine (SM408A - data validation results for this analytical method are presented only in the November 5 rain event report package), biochemical oxygen demand (EPA method 405.1), non-filterable residue (total suspended solids, EPA method 160.2), filterable residue (total dissolved solids, EPA method 160.1), fecal coliform (Standard Method 9222-D for the November 5 rain event data validation report package, and Standard Method 9221-C for the December 4 rain event data validation report package), total recoverable phenolics (EPA method 420.2), total Kjeldahl nitrogen (EPA method 351.2), ammonia nitrogen (EPA method 350.1), nitrate-nitrite nitrogen (EPA method 353.2), organic nitrogen (EPA methods 351.2/350.1), and total phosphorus (EPA method 365.4).

Most of the details pertaining to the procedures and results of the data validation effort for the analytical data resulting from the November 5 rain event can be found in the November 5 rain event data validation package (Attachment B). However, some additional information needs to be provided concerning the assessment of whether or not the holding times were met for each of the analytical methods. The data validation team used the grab sample collection dates and times and the composite sample collection dates and times recorded on the COC forms in order to facilitate the determination of whether or not sample preparation and analysis procedures occurred within the maximum holding time limits set for each analytical method (see Table 2.2 for a listing of these holding time limits). While the sample collection dates given on the COC forms for the grab samples collected during the November 5 rain event are correct, some of the sample collection times given on these COC forms for the grab samples are incorrect. Each of the grab sample collection times recorded on the COC forms either: (1) was the true collection time for that particular grab sample, (2) preceded by 15 minutes the true collection time for that particular grab sample, or (3) followed by 15 minutes the true collection time for that particular grab sample. Because the data validators used grab sample collection times which either equaled, slightly preceded, or slightly followed the

true grab sample collection times during their assessment of whether or not sample preparation and analysis procedures occurred within the maximum holding time limits set for each analytical method, there is the possibility that the data validators may have made some erroneous judgments concerning whether or not holding times were exceeded. If the data validators had used the correct grab sample collection times during their assessment, a more accurate determination could have been made as to whether or not holding times were exceeded. Additionally, the sample collection dates given on the COC forms for the composite samples collected during the November 5 rain event are correct; however the sample collection times given on the COC forms for the composite samples are incorrect. Since the composite samples collected during the November 5 rain event were collected over a period of roughly three hours, the sample collection times for each of these samples actually consists of a range of times (e.g., 1:00 A.M. to 3:40 A.M.). The sample collection times written on the COC forms for each of these composite samples, however, consisted of only a single, discrete time (e.g., 12:50 A.M.). Furthermore, each of these single composite sample collection times recorded on the COC forms either: (1) was the true collection time of the first composite sample aliquot that was collected for that particular composite sample; or, (2) preceded by 10-30 minutes the true collection time of the first composite sample aliquot that was collected for that particular composite sample. Because the data validators used discrete composite sample collection times which either equaled or slightly preceded the true collection times of the first composite sample aliquots of the composite samples during their assessment of whether or not sample preparation and analysis procedures occurred within the maximum holding time limits set for each analytical method, there is the possibility that the data validators may have erroneously judged that some holding times were exceeded. If the data validators had used the correct composite sample collection time ranges during their assessment, a more accurate determination could have been made as to whether or not holding times were exceeded.

The potential influence of these errors (in the grab sample collection times and composite sample collection times used by the data validators) on the holding time limit assessment process for the analytical data of the grab and composite samples collected during the November 5 rain event would have been greatest for those analytical methods that have short holding time limits (pH, biochemical oxygen demand, fecal coliform, and residual chlorine). The effects of these data validation errors on the analytical data are considered to be minor. The fact that the incorrect composite sample collection times and all but one of the incorrect grab sample collection times given on the COCs precede their correct sample collection times means that the assessment of whether or not holding time limits were exceeded was conducted in a conservative manner from the standpoint of the data validator. This conservative approach could have possibly led to some of the resultant analytical data being over-qualified with respect to their final useability. This is preferable, however, to a condition that leads to an under-conservative data validation effort where the resultant analytical data are left under-qualified with respect to their useability. Secondly, because the errors in the grab sample collection times and the composite sample collection times that were used by the data validators were small in terms of length-of-time, the effects these errors had on the assessment of whether or not holding time limits were exceeded should be inconsequential. Finally, because the exact

times for the preparation and analysis of samples were not provided in the data package submitted by the laboratory (only sample preparation dates and sample analysis dates were provided), the data validators were forced to estimate the durations of the periods of time between sample collection and sample preparation and analysis during their holding time limit assessment process. These estimates of the durations of these periods of time probably had uncertainties in their magnitudes which exceeded the largest of the discrepancies between the erroneous grab and composite sample collection times recorded on the COC forms and their corresponding correct grab and composite sample collection times.

It should be noted that for the data validation effort on the analytical data resulting from the December 4 rain event (see the December 4 rain event data validation report package in Attachment B), the data validation team used the grab sample collection dates and times and the composite sample collection dates and times recorded in Table 3.2 of this report in order to facilitate the determination of whether or not sample preparation and analysis procedures occurred within the maximum holding time limits set for each analytical method. The grab sample collection dates and times and the composite sample collection dates and times given in Table 3.2 are correct. Also note from Table 3.2 that, for the composite samples collected during the December 4 rain event, the total duration from the beginning to the end of the collection of composite sample aliquots from each sampling location ranges from 45 minutes to 1 hour, 25 minutes. However, for each particular composite sample that was collected during the December 4 rain event, the data validation team chose to use the sample collection time of the last composite sample aliquot collected from that composite samples' sampling location as the collection time for that particular composite sample to assess whether or not sample preparation and analysis procedures occurred within the maximum holding time limits set for the analytical methods applied to that particular composite sample.

4.3 PRESENTATION OF ANALYTICAL RESULTS

Table 4.1 contains the laboratory analytical results for the analysis of the grab samples and composite samples which were collected at RAFB during the November 5 rain event. Sample Locations 1 through 8 were sampled during this rain event. Table 4.2 contains the laboratory analytical results for the analysis of the grab samples and composite samples which were collected during the December 4 rain event. Sample locations 9 through 12 were sampled during this rain event.

The data presented in Tables 4.1 and 4.2 are the fully validated data which resulted from the data validation effort performed on the laboratory data packages given in Attachment A of this report. As a result of this data validation efforts, several data qualifier flags were assigned to various parts of the data (i.e., U, UJ, J, and R-flags). Also contained in Tables 4.1 and 4.2 are the detection limits as set forth by the Georgia Environmental Protection Division for NPDES analytes. These detection limits are provided in the table as a convenience for comparing them to the laboratory reporting limits of the various methods of analysis.

Appendix I of the SWPPP provides a template for presenting future laboratory data as it appears in Tables 4.1 and 4.2. This template can be used to present the analytical data resulting from the future sampling efforts at RAFB.

Table 4.3 contains the free and total chlorine field test results for the composite samples collected during the December 4 rain event. As noted in an earlier section of this report, the composite samples collected during the November 5 rain event were sent to the laboratory for residual chlorine analysis (by method SM408A); these samples were not field tested for free and total chlorine.

4.4 DISCUSSION

This section describes the prominent findings among the analytical results presented in Tables 4.1, 4.2, and 4.3.

The grab samples collected during the November 5 rain event were analyzed for purgeable organics (EPA 624), pH (EPA 150.1), total recoverable oil and grease (EPA 413.2), and total cyanide (EPA 335.3). Total cyanide was not detected in any of the grab samples. The pH values measured at the laboratory for these grab samples ranged from 5.9 to 6.8; these values were flagged J as estimated since these measurements were made beyond the holding time limit for this analytical method. Total recoverable oil and grease was found at 2.8 mg/L and 2.3 mg/L in samples RAFB-SL2-G-E1 and RAFB-SL5-G-E1, respectively. Higher levels of total recoverable oil and grease were found in samples RAFB-SL6-G-E1 (20 mg/L) and RAFB-SL16-G-E1 (26 mg/L). Grab sample RAFB-SL16-G-E1 was the field duplicate of grab sample RAFB-SL6-G-E1. Notice that the total cyanide, pH, and total recoverable oil and grease results for sample RAFB-SL16-G-E1 agree closely with the total cyanide, pH, and total recoverable oil and grease results for sample RAFB-SL6-G-E1.

No purgeable organics (EPA 624) were detected in samples RAFB-SL2-G-E1, RAFB-SL3-G-E1, RAFB-SL4-G-E1, and RAFB-SL5-G-E1. Sample RAFB-SL1-G-E1 contained the following analytes at detectable concentrations: benzene (24 J µg/L), ethylbenzene (1.4 J µg/L), and toluene (1.3 J µg/L). Sample RAFB-SL6-G-E1 contained the following analytes at detectable concentrations: benzene (1.5 J µg/L), chlorobenzene (8.7 J µg/L), and toluene (1.2 J µg/L). Sample RAFB-SL7-G-E1 contained chlorobenzene at 2 J µg/L. Sample RAFB-SL8-C-E1 contained the following analytes at detectable concentrations: chlorobenzene (4 J ug/L), cis 1,2-dichloroethene (3 ug/L), trichloroethylene (20 ug/L), and trichlorofluoromethane (1.1 ug/L). Finally, sample RAFB-SL16-G-E1 contained the following analytes at detectable concentrations: benzene (4.8 J µg/L), ethylbenzene (6.3 J µg/L), toluene (19 J µg/L), and xylenes (33 µg/L). Notice that, while sample RAFB-SL16-G-E1 was the field duplicate of sample RAFB-SL6-G-E1, there are some differences in their purgeable organics results.

Table 4.1 Robins AFB Analysis Results

Sample ID Matrix	GA EPD NPDES D.L	SL1-G-E1 WATER	SL2-G-E1 WATER	SL3-G-E1 WATER	SL4-G-E1 WATER	SL5-G-E1 WATER
EPA Method 624 - ug/l						
Benzene	2.0	24 J	1 U	1 U	1 U	1 U
Bromodichloromethane	10	1 U	1 U	1 U	1 U	1 U
Bromoform	10	1 U	1 U	1 U	1 U	1 U
Bromomethane	10	1 U	1 U	1 U	1 U	1 U
Carbon Tetrachloride	2.0	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	10	1 U	1 U	1 U	1 U	1 U
Chloroethane	5.0	1 U	1 U	1 U	1 U	1 U
2-Chloroethylvinyl Ether	10	10 U	10 U	10 U	10 U	10 U
Chloroform	2.0	1 U	1 U	1 U	1 U	1 U
Chloromethane	10	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	10	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	10	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	10	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	10	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	2.0	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	2.0	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	2.0	1 U	1 U	1 U	1 U	1 U
Trans-1,2-Dichloroethene	2.0	1 U	1 U	1 U	1 U	1 U
Cis-1,2-Dichloroethene		1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	2.0	1 U	1 U	1 U	1 U	1 U
Cis-1,3-Dichloropropene	2.0	1 U	1 U	1 U	1 U	1 U
Trans-1,3-Dichloropropene	2.0	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	2.0	1.4 J	1 U	1 U	1 U	1 U
Methylene Chloride	10	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	2.0	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	2.0	1 U	1 U	1 U	1 U	1 U
Toluene	2.0	1.3 J	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	2.0	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	2.0	1 U	1 U	1 U	1 U	1 U
Trichloroethylene	2.0	1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane		1 U	1 U	1 U	1 U	1 U
Vinyl Chloride	10	1 U	1 U	1 U	1 U	1 U
Xylenes		1 U	1 U	1 U	1 U	1 U
Acrolein	50	50 U	50 U	50 U	50 U	50 U
Acrylonitrile	50	50 U	50 U	50 U	50 U	50 U
EPA Method 335.3 - mg/l						
Cyanide	0.025	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
EPA Method 150.1						
pH		6.2 J	6.5 J	6.5 J	6.2 J	6.5 J
EPA Method 413.2 - mg/l						
Oil & Grease		1 U	2.8	1 U	1 U	2.3

Table 4.1 - Continued Robins AFB Analysis Results

Sample ID Matrix	GA EPD NPDES D.L	SL6-G-E1 WATER	SL7-G-E1 WATER	SL8-G-E1 WATER	SL16-G-E1 WATER
EPA Method 624 - ug/l					
Benzene	2.0	1.5 J	1 U	1 U	4.8 J
Bromodichloromethane	10	1 U	1 U	1 U	1 U
Bromoform	10	1 U	1 U	1 U	1 U
Bromomethane	10	1 U	1 U	1 U	1 U
Carbon Tetrachloride	2.0	1 U	1 U	1 U	1 U
Chlorobenzene	10	8.7 J	2 J	4 J	1 U
Chloroethane	5.0	1 U	1 U	1 U	1 U
2-Chloroethylvinyl Ether	10	10 U	10 U	10 U	10 U
Chloroform	2.0	1 U	1 U	1 U	1 U
Chloromethane	10	1 U	1 U	1 U	1 U
Dibromochloromethane	10	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	10	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	10	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	10	1 U	1 U	1 U	1 U
1,1-Dichloroethane	2.0	1 U	1 U	1 U	1 U
1,2-Dichloroethane	2.0	1 U	1 U	1 U	1 U
1,1-Dichloroethene	2.0	1 U	1 U	1 U	1 U
Trans-1,2-Dichloroethene	2.0	1 U	1 U	1 U	1 U
Cis-1,2-Dichloroethene		1 U	1 U	3	1 U
1,2-Dichloropropane	2.0	1 U	1 U	1 U	1 U
Cis-1,3-Dichloropropene	2.0	1 U	1 U	1 U	1 U
Trans-1,3-Dichloropropene	2.0	1 U	1 U	1 U	1 U
Ethylbenzene	2.0	1 U	1 U	1 U	6.3 J
Methylene Chloride	10	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	2.0	1 U	1 U	1 U	1 U
Tetrachloroethene	2.0	1 U	1 U	1 U	1 U
Toluene	2.0	1.2 J	1 U	1 U	19 J
1,1,1-Trichloroethane	2.0	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	2.0	1 U	1 U	1 U	1 U
Trichloroethylene	2.0	1 U	1 U	20	1 U
Trichlorofluoromethane		1 U	1 U	1.1	1 U
Vinyl Chloride	10	1 U	1 U	1 U	1 U
Xylenes		1 U	1 U	1 U	33
Acrolein	50	50 U	50 U	50 U	50 U
Acrylonitrile	50	50 U	50 U	50 U	50 U
EPA Method 335.3 - mg/l					
Cyanide	0.025	0.01 U	0.01 U	0.01 U	0.01 U
EPA Method 150.1					
pH		6.8 J	5.9 J	6.6 J	6.8 J
EPA Method 413.2 - mg/l					
Oil & Grease		20	1 U	1 U	26

Table 4.1 - Continued Robins AFB Analysis Results

Sample ID Matrix	GA EPD NPDES D.L	SL1-C-E1 WATER	SL2-C-E1 WATER	SL3-C-E1 WATER	SL4-C-E1 WATER	SL5-C-E1 WATER
EPA Method 625 - ug/l						
Acenaphthene	10	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	10	10 U	10 U	10 U	10 U	10 U
Anthracene	10	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene	10	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	10	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	10	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	10	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	10	10 U	10 U	10 U	10 U	10 U
Benzyl butyl phthalate	10	10 U	10 U	10 U	10 U	10 U
Bis(2-Chloroethyl)ether	10	10 U	10 U	10 U	10 U	10 U
Bis(2-Chloroethoxy)methene	10	10 U	10 U	10 U	10 U	10 U
Bis(2-Ethylhexyl)phthalate	10	10 U	10 U	10 U	10 U	10 U
Bis(2-Chloroisopropyl)ether	10	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl-phenyl-ether	10	10 U	10 U	10 U	10 U	10 U
2-Chloronaphthalene	10	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenyl-ether	10	10 U	10 U	10 U	10 U	10 U
Chrysene	10	10 U	10 U	10 U	10 U	10 U
Dibenz(a,h)anthracene	10	10 U	10 U	10 U	10 U	10 U
Di-n-butylphthalate	10	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	10	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	10	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	10	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	20	20 U	20 U	20 U	20 U	20 U
Diethylphthalate	10	10 U	10 U	10 U	10 U	10 U
Dimethylphthalate	10	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	20	20 U	20 U	20 U	20 U	20 U
2,6-Dinitrotoluene	20	20 U	20 U	20 U	20 U	20 U
Di-n-octylphthalate	10	10 U	10 U	10 U	10 U	10 U
Fluoranthene	10	10 U	10 U	10 U	10 U	10 U
Fluorene	10	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene	10	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	10	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	2	2 U	2 U	2 U	2 U	2 U
Indeno(1,2,3-cd)pyrene	10	10 U	10 U	10 U	10 U	10 U
Isophorone	10	10 U	10 U	10 U	10 U	10 U
Naphthalene	10	10 U	10 U	10 U	10 U	10 U
Nitrobenzene	10	10 U	10 U	10 U	10 U	10 U
N-Nitrosodi-N-Propylamine	10	10 U	10 U	10 U	10 U	10 U
Phenanthrene	10	10 U	10 U	10 U	10 U	10 U
Pyrene	10	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	10	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-Methylphenol	10	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	10	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	10	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	10	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	50	50 U	50 U	50 U	50 U	50 U
2-Methyl-4,6-Dinitrophenol	50	50 U	50 U	50 U	50 U	50 U
2-Nitrophenol	50	10 U	10 U	10 U	10 U	10 U

Table 4.1 - Continued Robins AFB Analysis Results

Sample ID	GA EPD	SL6-C-E1	SL7-C-E1	SL8-C-E1	SL16-C-E1
Matrix	NPDES D.L	WATER	WATER	WATER	WATER
EPA Method 625 - ug/l					
Acenaphthene	10	10 U	10 U	10 U	10 U
Acenaphthylene	10	10 U	10 U	10 U	10 U
Anthracene	10	10 U	10 U	10 U	10 U
Benzo(a)anthracene	10	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	10	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	10	10 U	10 U	10 U	10 U
Benzo(a)pyrene	10	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	10	10 U	10 U	10 U	10 U
Benzyl butyl phthalate	10	10 U	10 U	10 U	10 U
Bis(2-Chloroethyl)ether	10	10 U	10 U	10 U	10 U
Bis(2-Chloroethoxy)methene	10	10 U	10 U	10 U	10 U
Bis(2-Ethylhexyl)phthalate	10	10 U	10 U	10 U	10 U
Bis(2-Chloroisopropyl)ether	10	10 U	10 U	10 U	10 U
4-Bromophenyl-phenyl-ether	10	10 U	10 U	10 U	10 U
2-Chloronaphthalene	10	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenyl-ether	10	10 U	10 U	10 U	10 U
Chrysene	10	10 U	10 U	10 U	10 U
Dibenz(a,h)anthracene	10	10 U	10 U	10 U	10 U
Di-n-butylphthalate	10	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	10	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	10	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	10	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	20	20 U	20 U	20 U	20 U
Diethylphthalate	10	10 U	10 U	10 U	10 U
Dimethylphthalate	10	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	20	20 U	20 U	20 U	20 U
2,6-Dinitrotoluene	20	20 U	20 U	20 U	20 U
Di-n-octylphthalate	10	10 U	10 U	10 U	10 U
Fluoranthene	10	10 U	10 U	10 U	10 U
Fluorene	10	10 U	10 U	10 U	10 U
Hexachlorobenzene	10	10 U	10 U	10 U	10 U
Hexachlorobutadiene	10	10 U	10 U	10 U	10 U
Hexachloroethane	2	2 U	2 U	2 U	2 U
Indeno(1,2,3-cd)pyrene	10	10 U	10 U	10 U	10 U
Isophorone	10	10 U	10 U	10 U	10 U
Naphthalene	10	10 U	10 U	10 U	10 U
Nitrobenzene	10	10 U	10 U	10 U	10 U
N-Nitrosodi-N-Propylamine	10	10 U	10 U	10 U	10 U
Phenanthrene	10	10 U	10 U	10 U	10 U
Pyrene	10	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	10	10 U	10 U	10 U	10 U
4-Chloro-3-Methylphenol	10	10 U	10 U	10 U	10 U
2-Chlorophenol	10	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	10	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	10	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	50	50 U	50 U	50 U	50 U
2-Methyl-4,6-Dinitrophenol	50	50 U	50 U	50 U	50 U
2-Nitrophenol	50	10 U	10 U	10 U	10 U

Table 4.1 - Continued Robins AFB Analysis Results

Sample ID	GA EPD	SL1-C-E1	SL2-C-E1	SL3-C-E1	SL4-C-E1	SL5-C-E1
Matrix	NPDES D.L	WATER	WATER	WATER	WATER	WATER
EPA Method 625 - ug/l (cont)						
4-Nitrophenol	50	50 U	50 U	50 U	50 U	50 U
Pentachlorophenol	20	20 U	20 U	20 U	20 U	20 U
Phenol	10	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	10	10 U	10 U	10 U	10 U	10 U
EPA Method 610 - ug/l						
Acenapthene	10	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	10	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	10	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	10	10 U	10 U	10 U	10 U	10 U
Benzo(b,k)fluoranthene	10	10 U	10 U	10 U	10 U	10 U
Chrysene + Benzo(a) Anthracene	10	10 U	10 U	10 U	10 U	10 U
Fluoranthene	10	10 U	10 U	10 U	10 U	10 U
Fluorene	10	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene + Dibenz(a,h)anthracene	10	10 U	10 U	10 U	10 U	10 U
Naphthalene	10	10 U	10 U	10 U	10 U	10 U
Phenanthrene + Anthracene	10	10 U	10 U	10 U	10 U	10 U
Pyrene	10	10 U	10 U	10 U	10 U	10 U
1-Methylnaphthalene		10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene		10 U	10 U	10 U	10 U	10 U
EPA Method 608 - ug/l						
Aldrin	0.1	0.05 U	0.05 U	0.05 R	0.05 R	0.05 U
alpha-BHC	0.1	0.05 U	0.05 U	0.05 R	0.05 R	0.05 U
beta-BHC	0.1	0.05 U	0.05 U	0.05 R	0.05 R	0.05 U
gamma-BHC	0.1	0.05 U	0.05 U	0.05 R	0.05 R	0.05 U
delta-BHC	0.1	0.05 U	0.05 U	0.05 R	0.05 R	0.05 U
Chlordane	0.5	0.5 U	0.5 U	0.5 R	0.5 R	0.5 U
4,4'-DDD	0.2	0.1 U	0.1 U	0.1 R	0.1 R	0.1 U
4,4'-DDE	0.2	0.1 U	0.1 U	0.1 R	0.1 R	0.1 U
4,4'-DDT	0.2	0.1 U	0.1 U	0.1 R	0.1 R	0.1 U
Dieldrin	0.5	0.1 U	0.1 U	0.1 R	0.1 R	0.1 U
Endosulfan I	0.5	0.05 U	0.05 U	0.05 R	0.05 R	0.05 U
Endosulfan II	0.5	0.1 U	0.1 U	0.1 R	0.1 R	0.1 U
Endosulfan Sulfate	0.5	0.1 U	0.1 U	0.1 R	0.1 R	0.1 U
Endrin	0.2	0.1 U	0.1 U	0.1 R	0.1 R	0.1 U
Endrin Aldehyde	0.2	0.1 U	0.1 U	0.1 R	0.1 R	0.1 U
Heptachlor	0.1	0.05 U	0.05 U	0.05 R	0.05 R	0.05 U
Heptachlor Epoxide	0.1	0.05 U	0.05 U	0.05 R	0.05 R	0.05 U
Kepone		0.1 U	0.1 U	0.1 R	0.1 R	0.1 U
Methoxychlor	0.3	0.3 U	0.3 U	0.3 R	0.3 R	0.3 U
Toxaphene	2.0	2 U	2 U	2 R	2 R	2 U
Aroclor-1016		1.0 U	1.0 U	1.0 R	1.0 R	1.0 U
Aroclor-1221		1.0 U	1.0 U	1.0 R	1.0 R	1.0 U
Aroclor-1232		1.0 U	1.0 U	1.0 R	1.0 R	1.0 U
Aroclor-1242		1.0 U	1.0 U	1.0 R	1.0 R	1.0 U
Aroclor-1248		1.0 U	1.0 U	1.0 R	1.0 R	1.0 U
Aroclor-1254		1.0 U	1.0 U	1.0 R	1.0 R	1.0 U
Aroclor-1260		1.0 U	1.0 U	1.0 R	1.0 R	1.0 U

Table 4.1 - Continued Robins AFB Analysis Results

Sample ID	GA EPD	SL6-C-E1	SL7-C-E1	SL8-C-E1	SL16-C-E1
Matrix	NPDES D.L	WATER	WATER	WATER	WATER
EPA Method 625 - ug/l (cont)					
4-Nitrophenol	50	50 U	50 U	50 U	50 U
Pentachlorophenol	20	20 U	20 U	20 U	20 U
Phenol	10	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	10	10 U	10 U	10 U	10 U
EPA Method 610 - ug/l					
Acenapthene	10	10 U	10 U	10 U	10 U
Acenaphthylene	10	10 U	10 U	10 U	10 U
Benzo(a)pyrene	10	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	10	10 U	10 U	10 U	10 U
Benzo(b,k)fluoranthene	10	10 U	10 U	10 U	10 U
Chrysene + Benzo(a) Anthracene	10	10 U	10 U	10 U	10 U
Fluoranthene	10	10 U	10 U	10 U	10 U
Fluorene	10	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene + Dibenz(a,h)anthracene	10	10 U	10 U	10 U	10 U
Naphthalene	10	10 U	10 U	10 U	10 U
Phenanthrene + Anthracene	10	10 U	10 U	10 U	10 U
Pyrene	10	10 U	10 U	10 U	10 U
1-Methylnaphthalene		10 U	10 U	10 U	10 U
2-Methylnaphthalene		10 U	10 U	10 U	10 U
EPA Method 608 - ug/l					
Aldrin	0.1	0.05 U	0.05 U	0.05 U	0.05 U
alpha-BHC	0.1	0.05 U	0.05 U	0.05 U	0.05 U
beta-BHC	0.1	0.05 U	0.05 U	0.05 U	0.05 U
gamma-BHC	0.1	0.05 U	0.05 U	0.05 U	0.05 U
delta-BHC	0.1	0.05 U	0.05 U	0.05 U	0.05 U
Chlordane	0.5	0.5 U	0.5 U	0.5 U	0.5 U
4,4'-DDD	0.2	0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDE	0.2	0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDT	0.2	0.1 U	0.1 U	0.1 U	0.1 U
Dieldrin	0.5	0.1 U	0.1 U	0.1 U	0.1 U
Endosulfan I	0.5	0.05 U	0.05 U	0.05 U	0.05 U
Endosulfan II	0.5	0.1 U	0.1 U	0.1 U	0.1 U
Endosulfan Sulfate	0.5	0.1 U	0.1 U	0.1 U	0.1 U
Endrin	0.2	0.1 U	0.1 U	0.1 U	0.1 U
Endrin Aldehyde	0.2	0.1 U	0.1 U	0.1 U	0.1 U
Heptachlor	0.1	0.05 U	0.05 U	0.05 U	0.05 U
Heptachlor Epoxide	0.1	0.05 U	0.05 U	0.05 U	0.05 U
Kepone		0.1 U	0.1 U	0.1 U	0.1 U
Methoxychlor	0.3	0.3 U	0.3 U	0.3 U	0.3 U
Toxaphene	2.0	2 U	2 U	2 U	2 U
Aroclor-1016		1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1221		1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1232		1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1242		1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1248		1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1254		1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1260		1.0 U	1.0 U	1.0 U	1.0 U

Table 4.1 - Continued Robins AFB Analysis Results

Sample ID Matrix	GA EPD NPDES D.L	SL1-C-E1 WATER	SL2-C-E1 WATER	SL3-C-E1 WATER	SL4-C-E1 WATER	SL5-C-E1 WATER
EPA Method 410.2 - mg/l						
Chemical Oxygen Demand		20 U	23	25	36	20
EPA Method 340.2 - mg/l						
Fluoride		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Standard Methods 408A - mg/l						
Residual Chlorine		1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
EPA Method 405.1 - mg/l						
Biochemical Oxygen Demand		2 U	2	3.9	2.1	2 U
EPA Method 160.2 - mg/l						
Total Suspended Solids		5 U	9.5	24	5 U	5 U
EPA Method 160.1 - mg/l						
Total Dissolved Solids		34	21	37	43	28
Standard Methods 9222-D - col/100mls						
Fecal Coliform		8 J	150 J	160 J	20 J	10 J
EPA Method 420.2 - mg/l						
Total Recoverable Phenolics		0.01 U	0.01 U	0.01 U	0.01 U	0.042
EPA Method 200.7 - mg/l						
Cadmium	0.01	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Chromium	0.01	0.01 U	0.01 U	0.012	0.01 U	0.01 U
Copper	0.02	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Nickel	0.02	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Silver	0.01	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Zinc	0.02	0.02 U	0.043	0.074	0.02 U	0.02 U
EPA Method 239.2 - mg/l						
Lead	0.025	0.005 U	0.005 U	.0074	0.005 U	0.005 U
EPA Method 351.2 - mg/l						
Total Kjeldahl Nitrogen		0.26	0.37	0.48	0.81	0.53
EPA Method 350.1 -mg/l						
Ammonia-N		0.22 J	0.24 J	0.079 J	0.49 J	0.59 J
EPA Method 353.2 - mg/l						
Nitrate + Nitrite-N		0.16 J	0.17 J	0.37 J	0.05 UJ	0.14 J
EPA Method 351.2/350.1 - mg/l						
Nitrogen (Organic)		0.07 U	0.13	0.4	0.32	0.07 U
EPA Method 365.4 - mg/l						
Total Phosphorus		0.1 U	0.11	0.1 U	0.1 U	0.1 U

Table 4.1 - Continued Robins AFB Analysis Results

Sample ID	GA EPD	SL6-C-E1	SL7-C-E1	SL8-C-E1	SL16-C-E1
Matrix	NPDES D.L	WATER	WATER	WATER	WATER
EPA Method 410.2 - mg/l					
Chemical Oxygen Demand		20 U	39	41	27
EPA Method 340.2 - mg/l					
Fluoride		0.2 U	0.2 U	0.2 U	0.2 U
Standard Methods 408A - mg/l					
Residual Chlorine		1 UJ	1 UJ	1 UJ	1 UJ
EPA Method 405.1 - mg/l					
Biochemical Oxygen Demand		2.3	2.5	2.3	2
EPA Method 160.2 - mg/l					
Total Suspended Solids		5 U	12	13	5 U
EPA Method 160.1 - mg/l					
Total Dissolved Solids		22	47	79	24
Standard Methods 9222-D - col/100mls					
Fecal Coliform		28 J	0 UJ	>2000 J	69 J
EPA Method 420.2 - mg/l					
Total Recoverable Phenolics		0.01 U	0.01 U	0.01 U	0.01 U
EPA Method 200.7 - mg/l					
Cadmium	0.01	0.005 U	0.005 U	0.005 U	0.005 U
Chromium	0.01	0.01 U	0.017	0.01 U	0.01 U
Copper	0.02	0.02 U	0.02 U	0.02 U	0.02 U
Nickel	0.02	0.02 U	0.02 U	0.02 U	0.02 U
Silver	0.01	0.01 U	0.01 U	0.01 U	0.01 U
Zinc	0.02	0.035	0.25	0.074	0.038
EPA Method 239.2 - mg/l					
Lead	0.025	0.005 U	0.005 U	0.01	0.005 U
EPA Method 351.2 - mg/l					
Total Kjeldahl Nitrogen		0.21	0.94	0.55	0.24
EPA Method 350.1 -mg/l					
Ammonia-N		0.059 J	0.61 J	0.31 J	0.058 J
EPA Method 353.2 - mg/l					
Nitrate + Nitrite-N		0.14 J	0.078 J	0.63 J	0.16 J
EPA Method 351.2/350.1 - mg/l					
Nitrogen (Organic)		0.15	0.33	0.24	0.18
EPA Method 365.4 - mg/l					
Total Phosphorus		0.1 U	0.1 U	0.4	0.1 U

TABLE 4.2 ROBINS AFB ANALYSIS RESULTS

Sample ID	GA EPD	SL9-G-E1	SL10-G-E1	SL11-G-E1	SL12-G-E1	SL13-G-E1	TB2
Matrix	NPDES D.I	WATER	WATER	WATER	WATER	WATER	WATER
EPA Method 624 - ug/l							
Benzene	2.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	10	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	10	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane	10	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	2.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	10	1.0 U	1.0 U	8.9	1.0 U	1.0 U	1.0 U
Chloroethane	5.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Chloroethylvinyl Ether	10	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	2.0	2.4	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	10	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	10	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	10	1.0 U	1.0 U	3.1	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	10	1.0 U	1.0 U	1.0	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	10	1.0 U	1.0 U	1.4	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	2.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	2.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	2.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trans-1,2-Dichloroethene	2.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cis-1,2-Dichloroethene		1.0 U	1.0 U	6.1	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	2.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cis-1,3-Dichloropropene	2.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trans-1,3-Dichloropropene	2.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	2.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride	10	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	2.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	2.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	2.0	1.0 U	1.1	1.0 U	1.0 U	1.5	1.0 U
1,1,1-Trichloroethane	2.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	2.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethylene	2.0	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichlorfluoromethane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride	10	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acrolein	50	50 U	50 U	50 U	50 U	50 U	50 U
Acrylonitrile	50	50 U	50 U	50 U	50 U	50 U	50 U
EPA Method 335.3 - mg/l							
Cyanide	25	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	
EPA Method 150.1							
pH		6.0 J	6.4 J	6.1 J	8.3 J	6.3 J	
EPA Method 413.2 - mg/l							
Oil & Grease		1.0 U	1.0 U	1.0 U	3.6	1.0 U	

TABLE 4.2 - Continued ROBINS AFB ANALYSIS RESULTS

Sample ID	GA EPD	SL9-C-E1	SL10-C-E1	SL11-C-E1	SL12-C-E1	SL13-C-E1
Matrix	NPDES D.I	WATER	WATER	WATER	WATER	WATER
EPA Method 625 - ug/l						
Acenaphthene	10	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	10	10 U	10 U	10 U	10 U	10 U
Anthracene	10	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene	10	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	10	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	10	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	10	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	10	10 U	10 U	10 U	10 U	10 U
Benzyl butyl phthalate	10	10 U	10 U	10 U	10 U	10 U
Bis(2-Chloroethyl)ether	10	10 U	10 U	10 U	10 U	10 U
Bis(2-Chloroethoxy)ether		10 U	10 U	10 U	10 U	10 U
Bis(2-Ethylhexyl)phthalate	10	10 U	10 U	10 U	10 U	10 U
Bis(2-Chloroisopropyl)ethe	10	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl-phenyl-eth	10	10 U	10 U	10 U	10 U	10 U
2-Chloronaphthalene	10	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenyl-eth	10	10 U	10 U	10 U	10 U	10 U
Chrysene	10	10 U	10 U	10 U	10 U	10 U
Dibenz(a,h)anthracene	10	10 U	10 U	10 U	10 U	10 U
Di-n-butylphthalate	10	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	10	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	10	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	10	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	20	20 U	20 U	20 U	20 U	20 U
Diethylphthalate	10	10 U	10 U	10 U	10 U	10 U
Dimethylphthalate	10	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	20	20 U	20 U	20 U	20 U	20 U
2,6-Dinitrotoluene	20	20 U	20 U	20 U	20 U	20 U
Di-n-octylphthalate	10	10 U	10 U	10 U	10 U	10 U
Fluoranthene	10	10 U	10 U	10 U	10 U	10 U
Fluorene	10	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene	10	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	10	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	2	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Indeno(1,2,3-cd)pyrene	10	10 U	10 U	10 U	10 U	10 U
Isophorone	10	10 U	10 U	10 U	10 U	10 U
Naphthalene	10	10 U	10 U	10 U	10 U	10 U
Nitrobenzene	10	10 U	10 U	10 U	10 U	10 U
N-Nitrosodi-N-Propylamine	10	10 U	10 U	10 U	10 U	10 U
Phenanthrene	10	10 U	10 U	10 U	10 U	10 U
Pyrene	10	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	10	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-Methylphenol	10	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	10	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	10	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	10	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	50	50 U	50 U	50 U	50 U	50 U
2-Methyl-4,6-Dinitrophenol	50	50 U	50 U	50 U	50 U	50 U
2-Nitrophenol	50	50 U	50 U	50 U	50 U	50 U
4-Nitrophenol	50	50 U	50 U	50 U	50 U	50 U

TABLE 4.2 - Continued ROBINS AFB ANALYSIS RESULTS

Sample ID	GA EPD	SL9-C-E1	SL10-C-E1	SL11-C-E1	SL12-C-E1	SL13-C-E1
Matrix	‡PDES D.I	WATER	WATER	WATER	WATER	WATER
EPA Method 625 - ug/l (cont)						
Pentachlorophenol	20	20 U	20 U	20 U	20 U	20 U
Phenol	10	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	10	10 U	10 U	10 U	10 U	10 U
Benzidine		80 U	80 U	80 U	80 U	80 U
EPA Method 610 - ug/l						
Acenapthene	10	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	10	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	10	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	10	10 U	10 U	10 U	10 U	10 U
Benzo(b,k)fluoranthene	10	10 U	10 U	10 U	10 U	10 U
Chrysene + Benzo(a) Anthracene	10	10 U	10 U	10 U	10 U	10 U
Fluoranthene	10	10 U	10 U	10 U	10 U	10 U
Fluorene	10	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene + Dibenz(a,h)anthracene	10	10 U	10 U	10 U	10 U	10 U
Naphthalene	10	10 U	10 U	10 U	10 U	10 U
Phenanthrene + Anthracene	10	10 U	10 U	10 U	10 U	10 U
Pyrene	10	10 U	10 U	10 U	10 U	10 U
1-Methylnaphthalene		10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene		10 U	10 U	10 U	10 U	10 U
EPA Method 608 - ug/l						
Aldrin	0.1	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U
alpha-BHC	0.1	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U
beta-BHC	0.1	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U
gamma-BHC	0.1	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U
delta-BHC	0.1	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U
Chlordane	0.5	0.5 UJ	0.5 U	0.5 UJ	0.5 UJ	0.5 U
4,4'-DDD	0.2	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 U
4,4'-DDE	0.2	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 U
4,4'-DDT	0.2	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 U
Dieldrin	0.5	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 U
Endosulfan I	0.5	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U
Endosulfan II	0.5	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 U
Endosulfan Sulfate	0.5	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 U
Endrin	0.2	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 U
Endrin Aldehyde	0.2	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 U
Heptachlor	0.1	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U
Heptachlor Epoxide	0.1	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U
Methoxychlor	0.3	0.5 UJ	0.5 U	0.5 UJ	0.5 UJ	0.5 U
Toxaphene	2.0	2 UJ	2 U	2 UJ	2 UJ	2 U
Aroclor-1016		1.0 UJ	1.0 U	1.0 UJ	1.0 UJ	1.0 U
Aroclor-1221		1.0 UJ	1.0 U	1.0 UJ	1.0 UJ	1.0 U
Aroclor-1232		1.0 UJ	1.0 U	1.0 UJ	1.0 UJ	1.0 U
Aroclor-1242		1.0 UJ	1.0 U	1.0 UJ	1.0 UJ	1.0 U
Aroclor-1248		1.0 UJ	1.0 U	1.0 UJ	1.0 UJ	1.0 U
Aroclor-1254		1.0 UJ	1.0 U	1.0 UJ	1.0 UJ	1.0 U
Aroclor-1260		1.0 UJ	1.0 U	1.0 UJ	1.0 UJ	1.0 U

TABLE 4.2 - Continued ROBINS AFB ANALYSIS RESULTS

Sample ID	GA EPD	SL9-C-E1	SL10-C-E1	SL11-C-E1	SL12-C-E1	SL13-C-E1
Matrix	JPDES D.I	WATER	WATER	WATER	WATER	WATER
EPA Method 410.2 - mg/l						
Chemical Oxygen Demand		35 J	20 U	37 J	69 J	28 J
EPA Method 340.2 - mg/l						
Fluoride		0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
EPA Method 405.1 - mg/l						
Biochemical Oxygen Demand		2.0 UJ	2.0 UJ	2.9 J	13 J	2.0 UJ
EPA Method 160.2 - mg/l						
Total Suspended Solids		5.5	5.0 U	75	190	5.0 U
EPA Method 160.1 - mg/l						
Total Dissolved Solids		63	40	56	49	41
Standard Methods 9221-C - col/100mls						
Fecal Coliform		230 J	2.0 UJ	1300 J	70 J	20 J
EPA Method 420.2 - mg/l						
Total Phenolics		0.010 U	0.010 U	0.010 U	0.010 U	0.010 U
EPA Method 200.7 - mg/l						
Cadmium	0.01	##### U	##### U	##### U	0.074	##### U
Chromium	0.01	0.010 U	0.010 U	0.010 U	0.054	0.010 U
Copper	0.02	0.020 U	0.020 U	0.020 U	0.065	0.020 U
Nickel	0.02	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Silver	0.01	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U
Zinc	0.02	0.020 U	0.021	0.034	0.270	0.020 U
EPA Method 239.2 - mg/l						
Lead	0.025	##### U	##### U	#####	0.099	##### U
EPA Method 351.2 - mg/l						
Total Kjedahl Nitrogen		0.84 J	0.65 J	0.65 J	1.1 J	0.71 J
EPA Method 350.1 -mg/l						
Ammonia-N		0.12 J	0.15 J	0.26 J	0.13 J	0.084 J
EPA Method 353.2 - mg/l						
Nitrate + Nitrite-N		0.41	0.063	0.078	0.28	0.056
EPA Method 351.2/350.1 - mg/l						
Nitrogen (Organic)		0.72 J	0.50 J	0.39 J	0.97 J	0.63 J
EPA Method 365.4 - mg/l						
Total Phosphorus		0.10 UJ	0.10 UJ	0.15 J	0.16 J	0.10 UJ

Table 4.3

Analytical Results For The Field Test For Free and Total Chlorine Conducted On The Composite Samples Collected During The December 4, 1993 Rain Event

Analyst:	**Alan Bollinger**
Location of Analysis:	**Engineering-Science Field Office, Warner Robins, Georgia**
Date of Analysis:	**December 5, 1993**
Time of Analysis:	**Approximately 11:00 A.M.**

	Analytical Results	
Sample ID	**Free Chlorine**	**Total Chlorine**
RAFB-SL9-C-E1	0.05 mg/l	*
RAFB-SL10-C-E1	0 mg/l	0 mg/l
RAFB-SL11-C-E1	0.04 mg/l	0.04 mg/l
RAFB-SL12-C-E1	0 mg/l	0 mg/l

*Total chlorine analysis was not performed on this composite sample.

The composite samples collected during the November 5 rain event were analyzed for the analytical methods listed in Table 1.2 of this report. As shown in Table 4.1, no analytes were detected in any of the composite samples for the following organic methods of analysis: base/neutrals and acids (EPA 625), polynuclear aromatic hydrocarbons (EPA 610), and organochlorine pesticides and PCBs (EPA 608).

Note in Table 4.1 that the analytical results for the analysis of samples RAFB-SL3-C-E1 and RAFB-SL4-C-E1 by EPA method 608 (organochlorine pesticides and PCBs) were rejected (flagged R) during data validation due to very low surrogate spike percent recoveries in these samples. These analytical results were reported as being below the laboratory reporting limits for all analytes prior to the assignment of the R flags.

Fluoride (EPA 340.2) and residual chlorine (SM408A) were not detected in any of the composite samples. Since the composite samples were analyzed for residual chlorine beyond the holding time limit for this method of analysis, these residual chlorine results may be biased low due to the possible loss of residual chlorine prior to analysis. The analytical results for residual chlorine were nondetect estimates flagged UJ because the holding time limits for this method of analysis was exceeded. Samples RAFB-SL1-C-E1 and RAFB-SL6-C-E1 did not have detectable levels of chemical oxygen demand (EPA 410.2). However, the concentrations for chemical oxygen demand in the seven remaining composite samples were detectable, and they ranged from 20-41 mg/L. Samples RAFB-SL1-C-E1 and RAFB-SL5-C-E1 did not have detectable levels of biochemical oxygen demand (EPA 405.1). However, the concentrations for biochemical oxygen demand in the seven remaining composite samples were detectable, and they ranged from 2.0-3.9 mg/L.

Detectable concentrations of non-filterable residue (total suspended solids, EPA 160.2) were found in samples RAFB-SL2-C-E1 (9.5 mg/L), RAFB-SL3-C-E1 (24 mg/L), RAFB-SL7-C-E1 (12 mg/L), and RAFB-SL8-C-E1 (13 mg/L). Non-filterable residue was not found at detectable concentrations in the remaining five composite samples. Measurable concentrations of filterable residue (total dissolved solids, EPA 160.1) were detected in all nine composite samples, at concentrations ranging from 21 mg/L (sample RAFB-SL2-C-E1) to 79 mg/L (sample RAFB-SL8-C-E1).

Fecal coliform (SM9222-D) was not detected in sample RAFB-SL7-C-E1. However, fecal coliform was found in the remaining eight composite samples at concentrations ranging from 8 J col/100 mls (sample RAFB-SL1-C-E1) to >2000 J col/100 mls (sample RAFB-SL8-C-E1). The analytical results for fecal coliform were flagged J as estimated for positive results, and flagged UJ as nondetect estimates for negative results, due to the fact that the composite samples were analyzed beyond the holding time limit for this method of analysis.

Total recoverable phenolics (EPA 420.2) were found at a detectable concentration in only one sample: sample RAFB-SL5-C-E1 with a concentration of 0.042 mg/L.

No detectable concentrations of cadmium, copper, nickel, and silver (ICP method EPA 200.7) were found in any of the composite samples. Chromium (ICP method EPA

200.7) was found at detectable concentrations in only two samples: sample RAFB-SL3-C-E1 with a concentration of 0.012 mg/L, and sample RAFB-SL7-C-E1 with a concentration of 0.017 mg/L. Zinc (ICP method EPA 200.7) was detected in the following composite samples: RAFB-SL2-C-E1 (0.043 mg/L), RAFB-SL3-C-E1 (0.074 mg/L), RAFB-SL6-C-E1 (0.035 mg/L), RAFB-SL7-C-E1 (0.25 mg/L), RAFB-SL8-C-E1 (0.074 mg/L), and RAFB-SL16-C-E1 (0.038 mg/L). Lead (furnace AA method EPA 239.2) was found at detectable concentrations in only two of the composite samples: sample RAFB-SL3-C-E1 with a concentration of 0.0074 mg/L, and sample RAFB-SL8-C-E1 with a concentration of 0.01 mg/L.

Total Kjeldahl nitrogen (EPA 351.2) was found at detectable concentrations in all nine composite samples; these concentrations ranged from 0.21 mg/L (sample RAFB-SL6-C-E1) to 0.94 mg/L (sample RAFB-SL7-C-E1). Ammonia nitrogen (EPA 350.1) was also found at detectable concentrations in all nine composite samples; these concentrations ranged from 0.058 J mg/L (sample RAFB-SL16-C-E1) to 0.61 J mg/L (sample RAFB-SL7-C-E1). Nitrate-nitrite nitrogen (EPA 353.2) was found at detectable concentrations in all of the composite samples except sample RAFB-SL4-C-E1; these concentrations ranged from 0.078 J mg/L (sample RAFB-SL7-C-E1) to 0.63 J mg/L (sample RAFB-SL8-C-E1). Organic nitrogen (EPA 351.2/EPA 350.1) was found at detectable concentrations in all of the composite samples except sample RAFB-SL1-C-E1 and sample RAFB-SL5-C-E1; these concentrations ranged from 0.13 mg/L (sample RAFB-SL2-C-E1) to 0.4 mg/L (sample RAFB-SL3-C-E1). Finally, total phosphorus (EPA 365.4) was found at detectable concentrations in only two composite samples: sample RAFB-SL2-C-E1 with a concentration of 0.11 mg/L, and sample RAFB-SL8-C-E1 with a concentration of 0.4 mg/L.

Composite sample RAFB-SL16-C-E1 was the field duplicate of composite sample RAFB-SL6-C-E1. Most of the analytical results for these two composite samples agree closely.

The grab samples collected during the December 4 rain event were analyzed for purgeable organics (EPA 624), pH (EPA 150.1), total recoverable oil and grease (EPA 413.2), and total cyanide (EPA 335.3). Total cyanide was not detected in any of the grab samples. The pH values measured at the laboratory for these grab samples ranged from 6.0 to 8.3; these values were flagged J as estimated since these measurements were made beyond the holding time limit for this analytical method. Total recoverable oil and grease was found at a detectable concentration in only one of the five grab samples: samples: sample RAFB-SL12-G-E1 with a concentration of 3.6 mg/L. Grab sample RAFB-SL13-G-E1 was the field duplicate of grab sample RAFB-SL10-G-E1. The total cyanide, pH, and total recoverable oil and grease results for sample RAFB-SL13-G-E1 agree closely with the total cyanide, pH, and total recoverable oil and grease results for sample RAFB-SL10-G-E1.

No purgeable organics (EPA 624) were detected in grab sample RAFB-SL12-G-E1. Sample RAFB-SL9-G-E1 contained the following analytes at detectable concentrations: chloroform (2.4 µg/L) and trichloroethylene (1.0 µg/L). Sample RAFB-SL10-G-E1 contained toluene at 1.1 µg/L. Sample RAFB-SL11-G-E1 contained the following

analytes at detectable concentrations: chlorobenzene (8.9 µg/L), 1,2-Dichlorobenzene (3.1 µg/L), 1,3-Dichlorobenzene (1.0 µg/L), 1,4-Dichlorobenzene (1.4 µg/L), and cis-1,2-dichloroethene (6.1 µg/L). Sample RAFB-SL13-G-E1 contained toluene at 1.5 µg/L. Grab sample RAFB-SL13-G-E1 was the field duplicate of grab sample RAFB-SL10-G-E1; note that the purgeable organics results for these two samples agree closely.

The composite samples collected during the December 4 rain event were analyzed for the analytical methods listed in Table 1.2 of this report. As can be seen among the analytical results given in Table 4.2 for the composite samples, no analytes were detected in any of the composite samples for the following organic methods of analysis: base/neutrals and acids (EPA 625), polynuclear aromatic hydrocarbons (EPA 610), and organochlorine pesticides and PCBs (EPA 608).

Fluoride (EPA 340.2) was not detected in any of the composite samples. Chemical oxygen demand (EPA 410.2) was found at detectable concentrations in all of the composite samples except sample RAFB-SL10-C-E1; these concentrations ranged from 28 J mg/L (sample RAFB-SL13-C-E1) to 69 J mg/L (sample RAFB-SL12-C-E1). Biochemical oxygen demand (EPA 405.1) was found at detectable concentrations in only two composite samples: sample RAFB-SL11-C-E1 (2.9 J mg/L) and sample RAFB-SL12-C-E1 (13 J mg/L). The analytical results for biochemical oxygen demand were flagged J as estimated for positive results, and flagged UJ as nondetected estimated for negative results, due to the fact that the composite samples were analyzed beyond the holding time limit for this method of analysis.

Detectable concentrations of non-filterable residue (total suspended solids, EPA 160.2) were found in the following samples: sample RAFB-SL9-C-E1 (5.5 mg/L), sample RAFB-SL11-C-E1 (75 mg/L), and sample RAFB-SL12-C-E1 (190 mg/L). Non-filterable residue was not found at detectable concentrations in the remaining two composite samples. Measurable concentrations of filterable residue (total dissolved solids, EPA 160.1) were detected in all five composite samples, at concentrations ranging from 40 mg/L (sample RAFB-SL10-C-E1) to 63 mg/L (sample RAFB-SL9-C-E1).

The result for fecal coliform (SM9221-C) in sample RAFB-SL10-C-E1 was given as <2.0 col/100 mls in the laboratory data package for the December 4 rain event (Attachment A); this result is given as 2.0 UJ col/100 mls in Table 4.2. Fecal coliform was found in the remaining four composite samples at concentrations ranging from 20 J col/100 mls (sample RAFB-SL13-C-E1) to 1300 J col/100 mls (sample RAFB-SL11-C-E1). The analytical results for fecal coliform were flagged J as estimated for positive results and flagged UJ as nondetected estimated for negative results, due to the fact that the composite samples were analyzed beyond the holding time limit for this method of analysis.

Total recoverable phenolics (EPA 420.2) were not detected in any of the composite samples.

No detectable concentrations of nickel and silver (ICP method EPA 200.7) were found in any of the composite samples. Cadmium (ICP method EPA 200.7) was found

at a detectable concentration in only one sample: sample RAFB-SL12-C-E1 with a concentration of 0.074 mg/L. Chromium (ICP method EPA 200.7) was found at a detectable concentration in only one sample: sample RAFB-SL12-C-E1 with a concentration of 0.054 mg/L. Copper (ICP method EPA 200.7) was found at a detectable concentration in only one sample: sample RAFB-SL12-C-E1 with a concentration of 0.065 mg/L. Zinc (ICP method EPA 200.7) was found at detectable concentrations in three of the five composite samples: sample RAFB-SL10-C-E1 with a concentration of 0.021 mg/L, sample RAFB-SL11-C-E1 with a concentration of 0.034 mg/L, and sample RAFB-SL12-C-E1 with a concentration of 0.270 mg/L. Lead (furnace AA method EPA 239.2) was found at detectable concentrations in only two of the composite samples: sample RAFB-SL11-C-E1 with a concentration of 0.0057 mg/L, and sample RAFB-SL12-C-E1 with a concentration of 0.099 mg/L.

Total Kjeldahl nitrogen (EPA 351.2) was found at detectable concentrations in all five composite samples; these concentrations ranged from 0.65 J mg/L (samples RAFB-SL10-C-E1 and RAFB-SL11-C-E1) to 1.1 J mg/L (sample RAFB-SL12-C-E1). Ammonia nitrogen (EPA 350.1) was also found at detectable concentrations in all five composite samples; these concentrations ranged from 0.084 J mg/L (sample RAFB-SL13-C-E1) to 0.26 J mg/L (sample RAFB-SL11-C-E1). Nitrate-nitrite nitrogen (EPA 353.2) was found at detectable concentrations in all five composite samples; these concentrations ranged from 0.056 mg/L (sample RAFB-SL13-C-E1) to 0.41 mg/L (sample RAFB-SL9-C-E1). Organic nitrogen (EPA 351.2/EPA 350.1) was found at detectable concentrations in all five composite samples; these concentrations ranged from 0.39 J mg/L (sample RAFB-SL11-C-E1) to 0.97 J mg/L (sample RAFB-SL12-C-E1). Finally, total phosphorus (EPA 365.4) was found at detectable concentrations in only two of the five composite samples: sample RAFB-SL11-C-E1 with a concentration of 0.15 J mg/L, and sample RAFB-SL12-C-E1 with a concentration of 0.16 J mg/L.

Composite sample RAFB-SL13-C-E1 was the field duplicate of composite sample RAFB-SL10-C-E1. The analytical results for sample RAFB-SL13-C-E1 agree closely with the results for sample RAFB-SL10-C-E1.

Table 4.3 presents the analytical results of the field test for free and total chlorine that was performed on several of the composite samples collected during the December 4 rain event. The free chlorine test revealed the presence of detectable concentrations of free chlorine in composite sample RAFB-SL9-C-E1 (0.05 mg/L) and in composite sample RAFB-SL11-C-E1 (0.04 mg/L). The total chlorine test revealed a detectable concentration of total chlorine in sample RAFB-SL11-C-E1 (0.04 mg/L). As indicated earlier in this section, residual chlorine (SM408A) was not found at detectable concentrations in any of the composite samples collected during the November 5 rain event. The residual chlorine results of this rain event, however, may not be directly comparable with the free and total chlorine results of the December 4 rain event, because the analysis for residual chlorine conducted on the samples of the November 5 rain event occurred beyond the holding time limit for this method (the residual chlorine results for the samples collected during the November 5 rain event may be biased low due to the possible loss of residual chlorine prior to analysis).

Tables 4.4 through 4.15 summarize the analytical results of the sampling program by drainage area. Each table lists only the parameters detected and the corresponding values at the sampling location.

Table 4.4 Drainage Area 2, Sampling Location SW-12
Summary of Parameters Detected In Storm Water
December 4, 1993

Parameter	Units	Sample Type[1]	Measurement[2]
pH	--	G	8.3J
Oil and Grease	mg/L	G	3.6
Chemical Oxygen Demand	mg/L	C	69J
Biochemical Oxygen Demand	mg/L	C	13J
Total Suspended Solids	mg/L	C	190
Total Dissolved Solids	mg/L	C	49
Fecal Coliform	col/100 mL	C	70J
Cadmium	mg/L	C	0.074
Chromium	mg/L	C	0.054
Copper	mg/L	C	0.065
Zinc	mg/L	C	0.270
Lead	mg/L	C	0.099
Total Kjeldahl Nitrogen	mg/L	C	1.1J
Ammonia-N	mg/L	C	0.13J
Nitrate-N + Nitrite-N	mg/L	C	0.28
Nitrogen (Organic)	mg/L	C	0.97
Total Phosphorous	mg/L	C	0.16J

(1) G - grab
C - time-weighted composite
(2) J - estimated

Table 4.5 Drainage Area 3, Sampling Location SW-11
Summary of Parameters Detected In Storm Water
December 4, 1993

Parameter	Units	Sample Type[1]	Measurement[2]
Chlorobenzene	µg/L	G	8.9
1,2-Dichlorobenzene	µg/L	G	3.1
1,3-Dichlorobenzene	µg/L	G	1.0
1,4-Dichlorobenzene	µg/L	G	1.4
Cis-1,2-dichloroethene	µg/L	G	6.1
pH	--	G	6.1
Chemical Oxygen Demand	mg/L	C	37J
Biochemical Oxygen Demand	mg/L	C	2.9J
Total Suspended Solids	mg/L	C	75
Total Dissolved Solids	mg/L	C	56
Fecal Coliform	col/100 mL	C	1300J
Zinc	mg/L	C	0.034
Lead	mg/L	C	0.0057
Total Kjeldahl Nitrogen	mg/L	C	0.65
Ammonia-N	mg/L	C	0.26J
Nitrate-N + Nitrite-N	mg/L	C	0.078
Nitrogen (Organic)	mg/L	C	0.39J
Total Phosphorous	mg/L	C	0.15J

(1) G - grab
C - time-weighted composite
(2) J - estimated

Table 4.6 Drainage Area 4, Sampling Location SW-10
Summary of Parameters Detected In Storm Water
December 4, 1993

Parameter	Units	Sample Type[1]	Measurement[2]	Field Duplicate[2]
Toluene	µg/L	G	1.1	1.5
pH	--	G	6.4J	6.3J
Chemical Oxygen Demand	mg/L	C	20U	28J
Total Dissolved Solids	mg/L	C	40	41
Fecal Coliform	col/100 mL	C	2.0UJ	20J
Zinc	mg/L	C	0.021	0.020U
Total Kjeldahl Nitrogen	mg/L	C	0.65J	0.71J
Ammonia-N	mg/L	C	0.15J	0.084J
Nitrate-N + Nitrite-N	mg/L	C	0.063	0.056
Nitrogen (Organic)	mg/L	C	0.50J	0.63J

(1) G - grab
C - time-weighted composite

(2) J - estimated
U - below detection limit

Table 4.7 Drainage Area 6, Sampling Location SW-9
Summary of Parameters Detected In Storm Water
December 4, 1993

Parameter	Units	Sample Type[1]	Measurement[2]
Chloroform	µg/L	G	2.4
Trichloroethylene	µg/L	G	1.0
pH	--	G	6.0J
Chemical Oxygen Demand	mg/L	C	35J
Total Suspended Solids	mg/L	C	5.5
Total Dissolved Solids	mg/L	C	63
Fecal Coliform	col/100 mL	C	230J
Total Kjeldahl Nitrogen	mg/L	C	0.84J
Ammonia-N	mg/L	C	0.12J
Nitrate-N + Nitrite-N	mg/L	C	0.41
Nitrogen (Organic)	mg/L	C	0.72J

(1) G - grab
C - time-weighted composite
(2) J - estimated

Table 4.8 Drainage Area 7, Sampling Location SW-8
Summary of Parameters Detected In Storm Water
November 5, 1993

Parameter	Units	Sample Type[1]	Measurement[2]
Chlorobenzene	µg/L	G	4J
Cis-1,2-dichloroethene	µg/L	G	3
Trichloroethylene	µg/L	G	20
Trichlorofluoromethane	µg/L	G	1.1
pH	--	G	6.6
Chemical Oxygen Demand	mg/L	C	41
Biochemical Oxygen Demand	mg/L	C	2.3
Total Suspended Solids	mg/L	C	13
Total Dissolved Solids	mg/L	C	79
Fecal Coliform	col/100 mL	C	>2000J
Zinc	mg/L	C	0.074
Lead	mg/L	C	0.01
Total Kjeldahl Nitrogen	mg/L	C	0.55
Ammonia-N	mg/L	C	0.31J
Nitrate-N + Nitrite-N	mg/L	C	0.63J
Nitrogen (Organic)	mg/L	C	0.24
Total Phosphorous	mg/L	C	0.4

(1) G - grab
C - time-weighted composite
(2) J - estimated

Table 4.9 Drainage Area 8, Sampling Location SW-7
Summary of Parameters Detected In Storm Water
November 5, 1993

Parameter	Units	Sample Type[1]	Measurement[2]
Chlorobenzene	µg/L	G	2J
pH	--	G	5.9J
Chemical Oxygen Demand	mg/L	C	39
Biochemical Oxygen Demand	mg/L	C	2.5
Total Suspended Solids	mg/L	C	12
Total Dissolved Solids	mg/L	C	47
Chromium	mg/L	C	0.017
Zinc	mg/L	C	0.25
Total Kjeldahl Nitrogen	mg/L	C	0.94
Ammonia-N	mg/L	C	0.61J
Nitrate + Nitrite-N	mg/L	C	0.078J
Nitrogen (Organic)	mg/L	C	0.33

(1) G - grab
C - time-weighted composite
(2) J - estimated

Table 4.10 Drainage Area 9, Sampling Location SW-6
Summary of Parameters Detected In Storm Water
November 5, 1993

Parameter	Units	Sample Type[1]	Measurement[2]	Field Duplicate[2]
Benzene	µg/L	C	1.5J	4.8J
Chlorobenzene	µg/L	C	8.7J	1U
Ethylbenzene	µg/L	C	1U	6.3J
Methylene chloride	µg/L	G	1U	1U
Toluene	µg/L	C	1.2J	19J
Xylene	µg/L	C	1U	33
pH	--	G	6.8	6.8
Oil and Grease	mg/L	G	20	26
Chemical Oxygen Demand	mg/L	C	20U	27
Biochemical Oxygen Demand	mg/L	C	2.3	2
Total Dissolved Solids	mg/L	C	22	24
Fecal Coliform	col/100 mL	C	28J	69J
Zinc	mg/L	C	0.035	0.038
Total Kjeldahl Nitrogen	mg/L	C	0.21	0.24
Ammonia-N	mg/L	C	0.059J	0.058J
Nitrate-N + Nitrite-N	mg/L	C	0.14J	0.16J
Nitrogen (Organic)	mg/L	C	0.15	0.18

(1) G - grab
C - time-weighted composite
(2) J - estimated
U - below detection limit

Table 4.11 Drainage Area 10, Sampling Location SW-5
Summary of Parameters Detected In Storm Water
November 5, 1993

Parameter	Units	Sample Type[1]	Measurement[2]
pH	--	G	6.5
Oil and Grease	mg/L	G	2.3
Chemical Oxygen Demand	mg/L	C	20
Total Dissolved Solids	mg/L	C	28
Fecal Coliform	col/100 mL	C	10J
Total Recoverable Phenolics	mg/L	C	0.042
Total Kjeldahl Nitrogen	mg/L	C	0.53
Ammonia-N	mg/L	C	0.59J
Nitrate + Nitrite-N	mg/L	C	0.14J

(1) G - grab
C - time-weighted composite
(2) J - estimated

Table 4.12 Drainage Area 11, Sampling Location SW-4
Summary of Parameters Detected In Storm Water
November 5, 1993

Parameter	Units	Sample Type[1]	Measurement[2]
pH	--	G	6.2J
Chemical Oxygen Demand	mg/L	C	36
Biochemical Oxygen Demand	mg/L	C	2.1
Total Dissolved Solids	mg/L	C	43
Fecal Coliform	col/100 mL	C	20J
Total Kjeldahl Nitrogen	mg/L	C	0.81
Ammonia-N	mg/L	C	0.49
Nitrogen (Organic)	mg/L	C	0.32

(1) G - grab
C - time-weighted composite
(2) J - estimated

Table 4.13 Drainage Area 14, Sampling Location SW-3
Summary of Parameters Detected In Storm Water
November 5, 1993

Parameter	Units	Sample Type[1]	Measurement[2]
pH	--	G	6.5J
Chemical Oxygen Demand	mg/L	C	25
Biochemical Oxygen Demand	mg/L	C	3.9
Total Suspended Solids	mg/L	C	24
Total Dissolved Solids	mg/L	C	37
Fecal Coliform	col/100 mL	C	160J
Zinc	mg/L	C	0.074
Lead	mg/L	C	0.0074
Total Kjeldahl Nitrogen	mg/L	C	0.48
Ammonia-N	mg/L	C	0.079J
Nitrate + Nitrite-N	mg/L	C	0.37J
Nitrogen (Organic)	mg/L	C	0.4

(1) G - grab
C - time-weighted composite
(2) J - estimated

Table 4.14 Drainage Area 15, Sampling Location SW-1
Summary of Parameters Detected In Storm Water
November 5, 1993

Parameter	Units	Sample Type[1]	Measurement[2]
Benzene	µg/L	G	24J
Ethylbenzene	µg/L	G	1.4J
Toluene	µg/L	G	1.3J
pH	--	G	6.2J
Total Dissolved Solids	mg/L	C	34
Fecal Coliform	col/100 mL	C	8J
Total Kjeldahl Nitrogen	mg/L	C	0.26
Ammonia-N	mg/L	C	0.22J
Nitrate + Nitrite-N	mg/L	C	0.16J

(1) G - grab
C - time-weighted composite
(2) J - estimated

Table 4.15 Drainage Area 16, Sampling Location SW-2
Summary of Parameters Detected In Storm Water
November 5, 1993

Parameter	Units	Sample Type[1]	Measurement[2]
pH	--	G	6.5J
Oil and Grease	mg/L	G	2.8
Chemical Oxygen Demand	mg/L	C	23
Biochemical Oxygen Demand	mg/L	C	2
Total Suspended Solids	mg/L	C	9.5
Total Dissolved Solids	mg/L	C	21
Fecal Coliform	col/100 mL	C	150J
Zinc	mg/L	C	0.043
Total Kjeldahl Nitrogen	mg/L	C	0.37
Ammonia-N	mg/L	C	0.24J
Nitrate + Nitrite-N	mg/L	C	0.17J
Nitrogen (Organic)	mg/L	C	0.13
Total Phosphorous	mg/L	C	0.11

(1) G - grab
C - time-weighted composite
(2) J - estimated

ATTACHMENT A
LABORATORY DATA PACKAGES FOR THE NOVEMBER-DECEMBER 1993 STORM WATER SAMPLING EFFORT
ROBINS AFB, GEORGIA

LABORATORY DATA PACKAGE FOR THE NOVEMBER 5, 1993 RAIN EVENT

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S3-46283

Received: 06 NOV 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

CC: Alan Bollinger

Project: AA002.03 Robins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46283-1	RAFB-SL1-G-E1	11-05-93
46283-2	RAFB-SL2-G-E1	11-05-93
46283-3	RAFB-SL3-G-E1	11-05-93
46283-4	RAFB-SL4-G-E1	11-05-93
46283-5	RAFB-SL5-G-E1	11-05-93

PARAMETER	46283-1	46283-2	46283-3	46283-4	46283-5
Purgeables (624)					
Benzene, ug/l	24	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chloroethylvinyl Ether, ug/l	<10	<10	<10	<10	<10
Chloroform, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Chloromethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Cis-1,2-Dichloroethene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0

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LOG NO: S3-46283

Received: 06 NOV 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

CC: Alan Bollinger

Project: AA002.03 Robins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46283-1	RAFB-SL1-G-E1	11-05-93
46283-2	RAFB-SL2-G-E1	11-05-93
46283-3	RAFB-SL3-G-E1	11-05-93
46283-4	RAFB-SL4-G-E1	11-05-93
46283-5	RAFB-SL5-G-E1	11-05-93

PARAMETER	46283-1	46283-2	46283-3	46283-4	46283-5
1,2-Dichloropropane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Cis-1,3-Dichloropropene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Trans-1,3-Dichloropropene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene, ug/l	1.4	<1.0	<1.0	<1.0	<1.0
Methylene Chloride, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene, ug/l	1.3	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethylene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Trichlorofluoromethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Xylenes, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Acrolein, ug/l	<50	<50	<50	<50	<50
Acrylonitrile, ug/l	<50	<50	<50	<50	<50
Surrogate - Toluene-d8	99 %	101 %	96 %	96 %	96 %
Surrogate - 4-Bromofluorobenzene	114 %	94 %	94 %	95 %	94 %
Surrogate - 1,2-Dichloroethane-d4	108 %	119 %	106 %	115 %	122 %
Date Analyzed	11.16.93	11.16.93	11.16.93	11.16.93	11.16.93

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LOG NO: S3-46283

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Project: AA002.03 Robins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46283-1	RAFB-SL1-G-E1	11-05-93
46283-2	RAFB-SL2-G-E1	11-05-93
46283-3	RAFB-SL3-G-E1	11-05-93
46283-4	RAFB-SL4-G-E1	11-05-93
46283-5	RAFB-SL5-G-E1	11-05-93

PARAMETER	46283-1	46283-2	46283-3	46283-4	46283-5
Cyanide (335.3)					
Cyanide (335.3), mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Date Analyzed	11.11.93	11.11.93	11.11.93	11.11.93	11.11.93
pH (150.1)					
pH, units	6.2	6.5	6.5	6.2	6.5
Date Analyzed	11.07.93	11.07.93	11.07.93	11.07.93	11.07.93
Oil & Grease					
Oil & Grease (413.2), mg/l	<1.0	2.8	<1.0	<1.0	2.3
Date Analyzed	11.18.93	11.18.93	11.18.93	11.18.93	11.18.93

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46283-6	RAFB-SL6-G-E1	11-05-93
46283-7	RAFB-SL7-G-E1	11-05-93
46283-8	RAFB-SL8-G-E1	11-05-93
46283-9	RAFB-SL16-G-E1	11-05-93

PARAMETER	46283-6	46283-7	46283-8	46283-9
Purgeables (624)				
Benzene, ug/l	1.5	<1.0	<1.0	4.8
Bromodichloromethane, ug/l	<1.0	<1.0	<1.0	<1.0
Bromoform, ug/l	<1.0	<1.0	<1.0	<1.0
Bromomethane, ug/l	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride, ug/l	<1.0	<1.0	<1.0	<1.0
Chlorobenzene, ug/l	8.7	2.0	4.0	<1.0
Chloroethane, ug/l	<1.0	<1.0	<1.0	<1.0
2-Chloroethylvinyl Ether, ug/l	<10	<10	<10	<10
Chloroform, ug/l	<1.0	<1.0	<1.0	<1.0
Chloromethane, ug/l	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane, ug/l	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene, ug/l	<1.0	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene, ug/l	<1.0	<1.0	<1.0	<1.0
Cis-1,2-Dichloroethene, ug/l	<1.0	<1.0	3.0	<1.0
1,2-Dichloropropane, ug/l	<1.0	<1.0	<1.0	<1.0

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46283-6	RAFB-SL6-G-E1	11-05-93
46283-7	RAFB-SL7-G-E1	11-05-93
46283-8	RAFB-SL8-G-E1	11-05-93
46283-9	RAFB-SL16-G-E1	11-05-93

PARAMETER	46283-6	46283-7	46283-8	46283-9
Cis-1,3-Dichloropropene, ug/l	<1.0	<1.0	<1.0	<1.0
Trans-1,3-Dichloropropene, ug/l	<1.0	<1.0	<1.0	<1.0
Ethylbenzene, ug/l	<1.0	<1.0	<1.0	6.3
Methylene Chloride, ug/l	<1.0	<1.0	<1.0	1.0
1,1,2,2-Tetrachloroethane, ug/l	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene, ug/l	<1.0	<1.0	<1.0	<1.0
Toluene, ug/l	1.2	<1.0	<1.0	19
1,1,1-Trichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0
Trichloroethylene, ug/l	<1.0	<1.0	20	<1.0
Trichlorofluoromethane, ug/l	<1.0	<1.0	1.1	<1.0
Vinyl Chloride, ug/l	<1.0	<1.0	<1.0	<1.0
Xylenes, ug/l	<1.0	<1.0	<1.0	33
Acrolein, ug/l	<50	<50	<50	<50
Acrylonitrile, ug/l	<50	<50	<50	<50
Surrogate - Toluene-d8	99 %	103 %	93 %	108 %
Surrogate - 4-Bromofluorobenzene	90 %	96 %	100 %	89 %
Surrogate - 1,2-Dichloroethane-d4	104 %	103 %	99 %	97 %
Date Analyzed	11.16.93	11.16.93	11.19.93	11.19.93
Cyanide (335.3)				
Cyanide (335.3), mg/l	<0.010	<0.010	<0.010	<0.010
Date Analyzed	11.11.93	11.11.93	11.11.93	11.11.93

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LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46283-6	RAFB-SL6-G-E1	11-05-93
46283-7	RAFB-SL7-G-E1	11-05-93
46283-8	RAFB-SL8-G-E1	11-05-93
46283-9	RAFB-SL16-G-E1	11-05-93

PARAMETER	46283-6	46283-7	46283-8	46283-9
pH (150.1)				
pH, units	6.8	5.9	6.6	6.8
Date Analyzed	11.07.93	11.07.93	11.07.93	11.07.93
Oil & Grease				
Oil & Grease (413.2), mg/l	20	<1.0	<1.0	26
Date Analyzed	11.18.93	11.18.93	11.18.93	11.18.93

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LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
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46283-11	RAFB-SL2-C-E1	11-05-93
46283-12	RAFB-SL3-C-E1	11-05-93
46283-13	RAFB-SL4-C-E1	11-05-93
46283-14	RAFB-SL5-C-E1	11-05-93

PARAMETER	46283-10	46283-11	46283-12	46283-13	46283-14
Chemical Oxygen Demand (410.2)					
Chemical Oxygen Demand, mg/l	<20	23	25	36	20
Date Analyzed	11.09.93	11.09.93	11.09.93	11.09.93	11.09.93
Fluoride (340.2)					
Fluoride, mg/l	<0.20	<0.20	<0.20	<0.20	<0.20
Date Analyzed	11.16.93	11.16.93	11.16.93	11.16.93	11.16.93
Residual Chloride					
Residual Chlorine, mg/l	<1.0	<1.0	<1.0	<1.0	<1.0
Date Analyzed	11.09.93	11.09.93	11.09.93	11.09.93	11.09.93
Biochemical Oxygen Demand (5-Day) (405.1)					
Biochemical Oxygen Demand (5 Day), mg/l	<2.0	2.0	3.9	2.1	<2.0
Date Analyzed	11.07.93	11.07.93	11.07.93	11.07.93	11.07.93
Suspended Solids (160.2)					
Suspended Solids (160.2), mg/l	<5.0	9.5	24	<5.0	<5.0
Date Analyzed	11.08.93	11.08.93	11.08.93	11.08.93	11.08.93
Total Dissolved Solids (160.1)					
Total Dissolved Solids, mg/l	34	21	37	43	28
Date Analyzed	11.08.93	11.10.93	11.08.93	11.08.93	11.08.93

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LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
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46283-11	RAFB-SL2-C-E1	11-05-93
46283-12	RAFB-SL3-C-E1	11-05-93
46283-13	RAFB-SL4-C-E1	11-05-93
46283-14	RAFB-SL5-C-E1	11-05-93

PARAMETER	46283-10	46283-11	46283-12	46283-13	46283-14
Fecal Coliform (MF)					
Fecal Coliform, col/100mls	8.0*F8	150*F8	160*F8	20*F8	10*F8
Date Analyzed	11.08.93	11.08.93	11.08.93	11.08.93	11.08.93
Phenolics, Total Recoverable					
Phenolics,Total Recoverable, mg/l	<0.010	<0.010	<0.010	<0.010	0.042
Date Analyzed	11.23.93	11.23.93	11.23.93	11.21.93	11.21.93
Cadmium (200.7)					
Cadmium (200.7), mg/l	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Date Analyzed	11.23.93	11.23.93	11.23.93	11.23.93	11.23.93
Chromium (200.7)					
Chromium (200.7), mg/l	<0.010	<0.010	0.012	<0.010	<0.010
Date Analyzed	11.23.93	11.23.93	11.23.93	11.23.93	11.23.93
Copper (200.7)					
Copper (200.7), mg/l	<0.020	<0.020	<0.020	<0.020	<0.020
Date Analyzed	11.23.93	11.23.93	11.23.93	11.23.93	11.23.93
Nickel (200.7)					
Nickel (200.7), mg/l	<0.020	<0.020	<0.020	<0.020	<0.020
Date Analyzed	11.23.93	11.23.93	11.23.93	11.23.93	11.23.93
Silver (200.7)					
Silver (200.7), mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Date Analyzed	11.23.93	11.23.93	11.23.93	11.23.93	11.23.93

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Revision 1 12/14/93
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46283-10	RAFB-SL1-C-E1	11-05-93
46283-11	RAFB-SL2-C-E1	11-05-93
46283-12	RAFB-SL3-C-E1	11-05-93
46283-13	RAFB-SL4-C-E1	11-05-93
46283-14	RAFB-SL5-C-E1	11-05-93

PARAMETER	46283-10	46283-11	46283-12	46283-13	46283-14
Zinc (200.7)					
Zinc (200.7), mg/l	<0.020	0.043	0.074	<0.020	<0.020
Date Analyzed	11.23.93	11.23.93	11.23.93	11.23.93	11.23.93
Lead (239.2)					
Lead (239.2), mg/l	<0.0050	<0.0050	0.0074	<0.0050	<0.0050
Date Analyzed	11.11.93	11.11.93	11.11.93	11.11.93	11.11.93
Total Kjeldahl Nitrogen (351.2)					
Total Kjeldahl Nitrogen-N, mg/l	0.26	0.37	0.48	0.81	0.53
Date Analyzed	11.19.93	11.19.93	11.19.93	11.19.93	12.03.93
Ammonia-N (350.1)					
Ammonia-N, mg/l	0.22	0.24	0.079	0.49	0.59
Date Analyzed	11.22.93	11.22.93	11.22.93	11.22.93	11.22.93
Nitrate + Nitrite-N (353.2)					
Nitrate + Nitrite-N, mg/l	0.16	0.17	0.37	<0.050	0.14
Date Analyzed	11.10.93	11.10.93	11.10.93	11.10.93	11.10.93
Nitrogen (Organic) (351.2/350.1)					
Nitrogen(Organic) (351.2/350.1), mg/l	<0.070	0.13	0.40	0.32	<0.070
Date Analyzed	11.22.93	11.22.93	11.22.93	11.22.93	12.03.93
Total Phosphorous (365.4)					
Total Phosphorus (365.4), mg/l	<0.10	0.11	<0.10	<0.10	<0.10
Date Analyzed	11.19.93	11.19.93	11.19.93	11.19.93	11.19.93

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46283-12	RAFB-SL3-C-E1	11-05-93
46283-13	RAFB-SL4-C-E1	11-05-93
46283-14	RAFB-SL5-C-E1	11-05-93

PARAMETER	46283-10	46283-11	46283-12	46283-13	46283-14
BN-A Extractables (625)					
Acenaphthene, ug/l	<10	<10	<10	<10	<10
Acenaphthylene, ug/l	<10	<10	<10	<10	<10
Anthracene, ug/l	<10	<10	<10	<10	<10
Benzo(a)Anthracene, ug/l	<10	<10	<10	<10	<10
Benzo(b)fluoranthene, ug/l	<10	<10	<10	<10	<10
Benzo(k)fluoranthene, ug/l	<10	<10	<10	<10	<10
Benzo(a)pyrene, ug/l	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene, ug/l	<10	<10	<10	<10	<10
Benzyl butyl phthalate, ug/l	<10	<10	<10	<10	<10
bis(2-Chloroethyl)ether, ug/l	<10	<10	<10	<10	<10
bis(2-Chloroethoxy)methane, ug/l	<10	<10	<10	<10	<10
bis(2-Ethylhexyl)phthalate, ug/l	<10	<10	<10	<10	<10
Bis(2-chloroisopropyl)ether, ug/l	<10	<10	<10	<10	<10
4-Bromophenyl-phenyl-ether, ug/l	<10	<10	<10	<10	<10
2-Chloronaphthalene, ug/l	<10	<10	<10	<10	<10
4-Chlorophenyl-phenyl ether, ug/l	<10	<10	<10	<10	<10
Chrysene, ug/l	<10	<10	<10	<10	<10
Dibenz(a,h)anthracene, ug/l	<10	<10	<10	<10	<10
Di-n-butylphthalate, ug/l	<10	<10	<10	<10	<10

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46283-12	RAFB-SL3-C-E1	11-05-93
46283-13	RAFB-SL4-C-E1	11-05-93
46283-14	RAFB-SL5-C-E1	11-05-93

PARAMETER	46283-10	46283-11	46283-12	46283-13	46283-14
1,3-Dichlorobenzene, ug/l	<10	<10	<10	<10	<10
1,2-Dichlorobenzene, ug/l	<10	<10	<10	<10	<10
1,4-Dichlorobenzene, ug/l	<10	<10	<10	<10	<10
3,3'-Dichlorobenzidine, ug/l	<20	<20	<20	<20	<20
Diethylphthalate, ug/l	<10	<10	<10	<10	<10
Dimethylphthalate, ug/l	<10	<10	<10	<10	<10
2,4-Dinitrotoluene, ug/l	<20	<20	<20	<20	<20
2,6-Dinitrotoluene, ug/l	<20	<20	<20	<20	<20
Di-n-octylphthalate, ug/l	<10	<10	<10	<10	<10
Fluoranthene, ug/l	<10	<10	<10	<10	<10
Fluorene, ug/l	<10	<10	<10	<10	<10
Hexachlorobenzene, ug/l	<10	<10	<10	<10	<10
Hexachlorobutadiene, ug/l	<10	<10	<10	<10	<10
Hexachloroethane, ug/l	<2.0	<2.0	<2.0	<2.0	<2.0
Indeno(1,2,3-cd)pyrene, ug/l	<10	<10	<10	<10	<10
Isophorone, ug/l	<10	<10	<10	<10	<10
Naphthalene, ug/l	<10	<10	<10	<10	<10
Nitrobenzene, ug/l	<10	<10	<10	<10	<10
N-Nitrosodi-N-Propylamine, ug/l	<10	<10	<10	<10	<10
Phenanthrene, ug/l	<10	<10	<10	<10	<10

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LOG NO: S3-46283
Rev-2 12/16/93
Received: 06 NOV 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

CC: Alan Bollinger

Project: AA002.03 Robins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46283-10	RAFB-SL1-C-E1	11-05-93
46283-11	RAFB-SL2-C-E1	11-05-93
46283-12	RAFB-SL3-C-E1	11-05-93
46283-13	RAFB-SL4-C-E1	11-05-93
46283-14	RAFB-SL5-C-E1	11-05-93

PARAMETER	46283-10	46283-11	46283-12	46283-13	46283-14
Pyrene, ug/l	<10	<10	<10	<10	<10
1,2,4-Trichlorobenzene, ug/l	<10	<10	<10	<10	<10
4-Chloro-3-methylphenol, ug/l	<10	<10	<10	<10	<10
2-Chlorophenol, ug/l	<10	<10	<10	<10	<10
2,4-Dichlorophenol, ug/l	<10	<10	<10	<10	<10
2,4-Dimethylphenol, ug/l	<10	<10	<10	<10	<10
2,4-Dinitrophenol, ug/l	<50	<50	<50	<50	<50
2-Methyl-4,6-dinitrophenol, ug/l	<50	<50	<50	<50	<50
2-Nitrophenol, ug/l	<10	<10	<10	<10	<10
4-Nitrophenol, ug/l	<50	<50	<50	<50	<50
Pentachlorophenol, ug/l	<20	<20	<20	<20	<20
Phenol, ug/l	<10	<10	<10	<10	<10
2,4,6-Trichlorophenol, ug/l	<10	<10	<10	<10	<10
Surrogate-PHL	79 %	75 %	64 %	70 %	74 %
Surrogate-2FP	77 %	73 %	58 %	68 %	69 %
Surrogate-TBP	96 %	90 %	90 %	79 %	94 %
Surrogate-NBZ	85 %	84 %	65 %	78 %	79 %
Surrogate-2FBP	89 %	85 %	68 %	81 %	82 %
Surrogate-TPH	91 %	72 %	59 %	62 %	68 %
Date Extracted	11.11.93	11.11.93	11.11.93	11.11.93	11.11.93
Date Analyzed	11.17.93	11.17.93	11.17.93	11.17.93	11.17.93

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46283-13	RAFB-SL4-C-E1	11-05-93
46283-14	RAFB-SL5-C-E1	11-05-93

PARAMETER	46283-10	46283-11	46283-12	46283-13	46283-14
Polynuclear Aromatics (610)					
Acenaphthene, ug/l	<10	<10	<10	<10	<10
Acenaphthylene, ug/l	<10	<10	<10	<10	<10
Benzo(a)pyrene, ug/l	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene, ug/l	<10	<10	<10	<10	<10
Benzo(b,k)fluoranthene, ug/l	<10	<10	<10	<10	<10
Chrysene + Benzo(a)anthracene, ug/l	<10	<10	<10	<10	<10
Fluoranthene, ug/l	<10	<10	<10	<10	<10
Fluorene, ug/l	<10	<10	<10	<10	<10
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l	<10	<10	<10	<10	<10
Naphthalene, ug/l	<10	<10	<10	<10	<10
Phenanthrene + Anthracene, ug/l	<10	<10	<10	<10	<10
Pyrene, ug/l	<10	<10	<10	<10	<10
1-Methylnaphthalene, ug/l	<10	<10	<10	<10	<10
2-Methylnaphthalene, ug/l	<10	<10	<10	<10	<10
Surrogate - 2-Fluorobiphenyl	28.4	28.2	22.6	26.1	37.8
Surrogate - Expected Value, ug/l	50	50	50	50	50
Surrogate - % Actual Recovery	57 %	56 %	45 %	52 %	76 %
Surrogate - Control Limit	27-123 %	27-123 %	27-123 %	27-123 %	27-123 %
Date Extracted	11.11.93	11.11.93	11.11.93	11.11.93	11.11.93
Date Analyzed	11.15.93	11.15.93	11.15.93	11.15.93	11.15.93

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46283-13	RAFB-SL4-C-E1	11-05-93
46283-14	RAFB-SL5-C-E1	11-05-93

PARAMETER	46283-10	46283-11	46283-12	46283-13	46283-14
Cl-Pesticides/PCB (608)					
Aldrin, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
alpha-BHC, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
beta-BHC, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
gamma-BHC, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
delta-BHC, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
Chlordane, ug/l	<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDD, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
4,4'-DDE, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
4,4'-DDT, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
Dieldrin, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
Endosulfan I, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
Endosulfan II, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
Endosulfan sulfate, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
Endrin, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
Endrin Aldehyde, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
Heptachlor, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
Heptachlor epoxide, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
Kepone, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
Methoxychlor, ug/l	<0.30	<0.30	<0.30	<0.30	<0.30

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46283-12	RAFB-SL3-C-E1	11-05-93
46283-13	RAFB-SL4-C-E1	11-05-93
46283-14	RAFB-SL5-C-E1	11-05-93

PARAMETER	46283-10	46283-11	46283-12	46283-13	46283-14
Toxaphene, ug/l	<2.0	<2.0	<2.0	<2.0	<2.0
Aroclor-1016, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Aroclor-1221, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Aroclor-1232, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Aroclor-1242, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Aroclor-1248, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Aroclor-1254, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Aroclor-1260, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Surrogate - Dibutylchlorendate % Rec	76 %	73 %	7.0 %	4.0 %	80 %
Date Extracted	11.10.93	11.10.93	11.10.93	11.10.93	11.10.93
Date Analyzed	11.25.93	11.25.93	11.25.93	11.25.93	11.28.93

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46283-16	RAFB-SL7-C-E1	11-05-93
46283-17	RAFB-SL8-C-E1	11-05-93
46283-18	RAFB-SL16-C-E1	11-05-93

PARAMETER	46283-15	46283-16	46283-17	46283-18
Chemical Oxygen Demand (410.2)				
Chemical Oxygen Demand, mg/l	<20	39	41	27
Date Analyzed	11.09.93	11.09.93	11.09.93	11.09.93
Fluoride (340.2)				
Fluoride, mg/l	<0.20	<0.20	<0.20	<0.20
Date Analyzed	11.16.93	11.16.93	11.16.93	11.16.93
Residual Chloride				
Residual Chlorine, mg/l	<1.0	<1.0	<1.0	<1.0
Date Analyzed	11.09.93	11.09.93	11.09.93	11.09.93
Biochemical Oxygen Demand (5-Day) (405.1)				
Biochemical Oxygen Demand (5 Day), mg/l	2.3	2.5	2.3	2.0
Date Analyzed	11.07.93	11.07.93	11.07.93	11.07.93
Suspended Solids (160.2)				
Suspended Solids (160.2), mg/l	<5.0	12	13	<5.0
Date Analyzed	11.08.93	11.08.93	11.08.93	11.08.93
Total Dissolved Solids (160.1)				
Total Dissolved Solids, mg/l	22	47	79	24
Date Analyzed	11.10.93	11.08.93	11.08.93	11.08.93
Fecal Coliform (MF)				
Fecal Coliform, col/100mls	28*F8	0*F9	>2000*F8	69*F8
Date Analyzed	11.08.93	11.08.93	11.08.93	11.08.93

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46283-17	RAFB-SL8-C-E1	11-05-93
46283-18	RAFB-SL16-C-E1	11-05-93

PARAMETER	46283-15	46283-16	46283-17	46283-18
Phenolics, Total Recoverable				
Phenolics,Total Recoverable, mg/l	<0.010	<0.010	<0.010	<0.010
Date Analyzed	11.21.93	11.21.93	11.21.93	11.23.93
Cadmium (200.7)				
Cadmium (200.7), mg/l	<0.0050	<0.0050	<0.0050	<0.0050
Date Analyzed	11.23.93	11.23.93	11.23.93	11.23.93
Chromium (200.7)				
Chromium (200.7), mg/l	<0.010	0.017	<0.010	<0.010
Date Analyzed	11.23.93	11.23.93	11.23.93	11.23.93
Copper (200.7)				
Copper (200.7), mg/l	<0.020	<0.020	<0.020	<0.020
Date Analyzed	11.23.93	11.23.93	11.23.93	11.23.93
Nickel (200.7)				
Nickel (200.7), mg/l	<0.020	<0.020	<0.020	<0.020
Date Analyzed	11.23.93	11.23.93	11.23.93	11.23.93
Silver (200.7)				
Silver (200.7), mg/l	<0.010	<0.010	<0.010	<0.010
Date Analyzed	11.23.93	11.23.93	11.23.93	11.23.93
Zinc (200.7)				
Zinc (200.7), mg/l	0.035	0.25	0.074	0.038
Date Analyzed	11.23.93	11.23.93	11.23.93	11.23.93

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46283-17	RAFB-SL8-C-E1	11-05-93
46283-18	RAFB-SL16-C-E1	11-05-93

PARAMETER	46283-15	46283-16	46283-17	46283-18
Lead (239.2)				
Lead (239.2), mg/l	<0.0050	<0.0050	0.010	<0.0050
Date Analyzed	11.15.93	11.11.93	11.11.93	11.11.93
Total Kjeldahl Nitrogen (351.2)				
Total Kjeldahl Nitrogen-N, mg/l	0.21	0.94	0.55	0.24
Date Analyzed	11.19.93	11.19.93	11.19.93	11.19.93
Ammonia-N (350.1)				
Ammonia-N, mg/l	0.059	0.61	0.31	0.058
Date Analyzed	11.22.93	11.22.93	11.22.93	11.22.93
Nitrate + Nitrite-N (353.2)				
Nitrate + Nitrite-N, mg/l	0.14	0.078	0.63	0.16
Date Analyzed	11.10.93	11.10.93	11.10.93	11.10.93
Nitrogen (Organic) (351.2/350.1)				
Nitrogen(Organic) (351.2/350.1), mg/l	0.15	0.33	0.24	0.18
Date Analyzed	11.22.93	11.22.93	11.22.93	11.22.93
Total Phosphorous (365.4)				
Total Phosphorus (365.4), mg/l	<0.10	<0.10	0.40	<0.10
Date Analyzed	11.19.93	11.19.93	11.19.93	11.19.93

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46283-18	RAFB-SL16-C-E1	11-05-93

PARAMETER	46283-15	46283-16	46283-17	46283-18
BN-A Extractables (625)				
Acenaphthene, ug/l	<10	<10	<10	<10
Acenaphthylene, ug/l	<10	<10	<10	<10
Anthracene, ug/l	<10	<10	<10	<10
Benzo(a)Anthracene, ug/l	<10	<10	<10	<10
Benzo(b)fluoranthene, ug/l	<10	<10	<10	<10
Benzo(k)fluoranthene, ug/l	<10	<10	<10	<10
Benzo(a)pyrene, ug/l	<10	<10	<10	<10
Benzo(g,h,i)perylene, ug/l	<10	<10	<10	<10
Benzyl butyl phthalate, ug/l	<10	<10	<10	<10
bis(2-Chloroethyl)ether, ug/l	<10	<10	<10	<10
bis(2-Chloroethoxy)methane, ug/l	<10	<10	<10	<10
bis(2-Ethylhexyl)phthalate, ug/l	<10	<10	<10	<10
Bis(2-chloroisopropyl)ether, ug/l	<10	<10	<10	<10
4-Bromophenyl-phenyl-ether, ug/l	<10	<10	<10	<10
2-Chloronaphthalene, ug/l	<10	<10	<10	<10
4-Chlorophenyl-phenyl ether, ug/l	<10	<10	<10	<10
Chrysene, ug/l	<10	<10	<10	<10
Dibenz(a,h)anthracene, ug/l	<10	<10	<10	<10
Di-n-butylphthalate, ug/l	<10	<10	<10	<10
1,3-Dichlorobenzene, ug/l	<10	<10	<10	<10

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46283-18	RAFB-SL16-C-E1	11-05-93

PARAMETER	46283-15	46283-16	46283-17	46283-18
1,2-Dichlorobenzene, ug/l	<10	<10	<10	<10
1,4-Dichlorobenzene, ug/l	<10	<10	<10	<10
3,3'-Dichlorobenzidine, ug/l	<20	<20	<20	<20
Diethylphthalate, ug/l	<10	<10	<10	<10
Dimethylphthalate, ug/l	<10	<10	<10	<10
2,4-Dinitrotoluene, ug/l	<20	<20	<20	<20
2,6-Dinitrotoluene, ug/l	<20	<20	<20	<20
Di-n-octylphthalate, ug/l	<10	<10	<10	<10
Fluoranthene, ug/l	<10	<10	<10	<10
Fluorene, ug/l	<10	<10	<10	<10
Hexachlorobenzene, ug/l	<10	<10	<10	<10
Hexachlorobutadiene, ug/l	<10	<10	<10	<10
Hexachloroethane, ug/l	<2.0	<2.0	<2.0	<2.0
Indeno(1,2,3-cd)pyrene, ug/l	<10	<10	<10	<10
Isophorone, ug/l	<10	<10	<10	<10
Naphthalene, ug/l	<10	<10	<10	<10
Nitrobenzene, ug/l	<10	<10	<10	<10
N-Nitrosodi-N-Propylamine, ug/l	<10	<10	<10	<10
Phenanthrene, ug/l	<10	<10	<10	<10
Pyrene, ug/l	<10	<10	<10	<10
1,2,4-Trichlorobenzene, ug/l	<10	<10	<10	<10

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ltr to J. Schendel

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46283-18	RAFB-SL16-C-E1	11-05-93

PARAMETER	46283-15	46283-16	46283-17	46283-18
4-Chloro-3-methylphenol, ug/l	<10	<10	<10	<10
2-Chlorophenol, ug/l	<10	<10	<10	<10
2,4-Dichlorophenol, ug/l	<10	<10	<10	<10
2,4-Dimethylphenol, ug/l	<10	<10	<10	<10
2,4-Dinitrophenol, ug/l	<50	<50	<50	<50
2-Methyl-4,6-dinitrophenol, ug/l	<50	<50	<50	<50
2-Nitrophenol, ug/l	<10	<10	<10	<10
4-Nitrophenol, ug/l	<50	<50	<50	<50
Pentachlorophenol, ug/l	<20	<20	<20	<20
Phenol, ug/l	<10	<10	<10	<10
2,4,6-Trichlorophenol, ug/l	<10	<10	<10	<10
Surrogate-PHL	78 %	66 %	66 %	76 %
Surrogate-2FP	73 %	64 %	65 %	77 %
Surrogate-TBP	94 %	93 %	101 %	122 %
Surrogate-NBZ	87 %	73 %	76 %	92 %
Surrogate-2FBP	86 %	78 %	72 %	94 %
Surrogate-TPH	86 %	56 %	58 %	79 %
Date Extracted	11.11.93	11.11.93	11.11.93	11.11.93
Date Analyzed	11.17.93	11.17.93	11.17.93	11.17.93

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LOG NO: S3-46283

Received: 06 NOV 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

CC: Alan Bollinger

Project: AA002.03 Robins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46283-15	RAFB-SL6-C-E1	11-05-93
46283-16	RAFB-SL7-C-E1	11-05-93
46283-17	RAFB-SL8-C-E1	11-05-93
46283-18	RAFB-SL16-C-E1	11-05-93

PARAMETER	46283-15	46283-16	46283-17	46283-18
Polynuclear Aromatics (610)				
Acenaphthene, ug/l	<10	<10	<10	<10
Acenaphthylene, ug/l	<10	<10	<10	<10
Benzo(a)pyrene, ug/l	<10	<10	<10	<10
Benzo(g,h,i)perylene, ug/l	<10	<10	<10	<10
Benzo(b,k)fluoranthene, ug/l	<10	<10	<10	<10
Chrysene + Benzo(a)anthracene, ug/l	<10	<10	<10	<10
Fluoranthene, ug/l	<10	<10	<10	<10
Fluorene, ug/l	<10	<10	<10	<10
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l	<10	<10	<10	<10
Naphthalene, ug/l	<10	<10	<10	<10
Phenanthrene + Anthracene, ug/l	<10	<10	<10	<10
Pyrene, ug/l	<10	<10	<10	<10
1-Methylnaphthalene, ug/l	<10	<10	<10	<10
2-Methylnaphthalene, ug/l	<10	<10	<10	<10
Surrogate - 2-Fluorobiphenyl	32.0	28.7	28.9	31.5
Surrogate - Expected Value, ug/l	50	50	50	50
Surrogate - % Actual Recovery	64 %	57 %	58 %	63 %
Surrogate - Control Limit	27-123 %	27-123 %	27-123 %	27-123 %
Date Extracted	11.11.93	11.11.93	11.11.93	11.11.93
Date Analyzed	11.15.93	11.15.93	11.15.93	11.15.93

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46283-16	RAFB-SL7-C-E1	11-05-93
46283-17	RAFB-SL8-C-E1	11-05-93
46283-18	RAFB-SL16-C-E1	11-05-93

PARAMETER	46283-15	46283-16	46283-17	46283-18
Cl-Pesticides/PCB (608)				
Aldrin, ug/l	<0.050	<0.050	<0.050	<0.050
alpha-BHC, ug/l	<0.050	<0.050	<0.050	<0.050
beta-BHC, ug/l	<0.050	<0.050	<0.050	<0.050
gamma-BHC, ug/l	<0.050	<0.050	<0.050	<0.050
delta-BHC, ug/l	<0.050	<0.050	<0.050	<0.050
Chlordane, ug/l	<0.50	<0.50	<0.50	<0.50
4,4'-DDD, ug/l	<0.10	<0.10	<0.10	<0.10
4,4'-DDE, ug/l	<0.10	<0.10	<0.10	<0.10
4,4'-DDT, ug/l	<0.10	<0.10	<0.10	<0.10
Dieldrin, ug/l	<0.10	<0.10	<0.10	<0.10
Endosulfan I, ug/l	<0.050	<0.050	<0.050	<0.050
Endosulfan II, ug/l	<0.10	<0.10	<0.10	<0.10
Endosulfan sulfate, ug/l	<0.10	<0.10	<0.10	<0.10
Endrin, ug/l	<0.10	<0.10	<0.10	<0.10
Endrin Aldehyde, ug/l	<0.10	<0.10	<0.10	<0.10
Heptachlor, ug/l	<0.050	<0.050	<0.050	<0.050
Heptachlor epoxide, ug/l	<0.050	<0.050	<0.050	<0.050
Kepone, ug/l	<0.10	<0.10	<0.10	<0.10
Methoxychlor, ug/l	<0.30	<0.30	<0.30	<0.30
Toxaphene, ug/l	<2.0	<2.0	<2.0	<2.0

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LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
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46283-16	RAFB-SL7-C-E1	11-05-93
46283-17	RAFB-SL8-C-E1	11-05-93
46283-18	RAFB-SL16-C-E1	11-05-93

PARAMETER	46283-15	46283-16	46283-17	46283-18
Aroclor-1016, ug/l	<1.0	<1.0	<1.0	<1.0
Aroclor-1221, ug/l	<1.0	<1.0	<1.0	<1.0
Aroclor-1232, ug/l	<1.0	<1.0	<1.0	<1.0
Aroclor-1242, ug/l	<1.0	<1.0	<1.0	<1.0
Aroclor-1248, ug/l	<1.0	<1.0	<1.0	<1.0
Aroclor-1254, ug/l	<1.0	<1.0	<1.0	<1.0
Aroclor-1260, ug/l	<1.0	<1.0	<1.0	<1.0
Surrogate - Dibutylchlorendate % Rec	98 %	60 %	88 %	111 %
Date Extracted	11.10.93	11.10.93	11.10.93	11.10.93
Date Analyzed	11.19.93	11.28.93	11.28.93	11.27.93

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46283-19	RAFB-TB1-G-E1	11-05-93

PARAMETER	46283-19
Purgeables (624)	
Benzene, ug/l	<1.0
Bromodichloromethane, ug/l	<1.0
Bromoform, ug/l	<1.0
Bromomethane, ug/l	<1.0
Carbon Tetrachloride, ug/l	<1.0
Chlorobenzene, ug/l	<1.0
Chloroethane, ug/l	<1.0
2-Chloroethylvinyl Ether, ug/l	<10
Chloroform, ug/l	<1.0
Chloromethane, ug/l	<1.0
Dibromochloromethane, ug/l	<1.0
1,2-Dichlorobenzene, ug/l	<1.0
1,3-Dichlorobenzene, ug/l	<1.0
1,4-Dichlorobenzene, ug/l	<1.0
1,1-Dichloroethane, ug/l	<1.0
1,2-Dichloroethane, ug/l	<1.0
1,1-Dichloroethene, ug/l	<1.0
Trans-1,2-Dichloroethene, ug/l	<1.0
Cis-1,2-Dichloroethene, ug/l	<1.0
1,2-Dichloropropane, ug/l	<1.0
Cis-1,3-Dichloropropene, ug/l	<1.0
Trans-1,3-Dichloropropene, ug/l	<1.0
Ethylbenzene, ug/l	<1.0

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46283-19	RAFB-TB1-G-E1	11-05-93

PARAMETER	46283-19
Methylene Chloride, ug/l	1.0
1,1,2,2-Tetrachloroethane, ug/l	<1.0
Tetrachloroethene, ug/l	<1.0
Toluene, ug/l	<1.0
1,1,1-Trichloroethane, ug/l	4.0
1,1,2-Trichloroethane, ug/l	<1.0
Trichloroethylene, ug/l	<1.0
Trichlorofluoromethane, ug/l	<1.0
Vinyl Chloride, ug/l	<1.0
Xylenes, ug/l	3.1
Acrolein, ug/l	<50
Acrylonitrile, ug/l	<50
Surrogate - Toluene-d8	98 %
Surrogate - 4-Bromofluorobenzene	129 %
Surrogate - 1,2-Dichloroethane-d4	98 %
Date Analyzed	11.19.93

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46283-20	Method Blank
46283-21	LCS/LCS Duplicate % Recovery
46283-22	LCS % RPD

PARAMETER	46283-20	46283-21	46283-22
Purgeables (624)			
Benzene, ug/l	<1.0	92/86 %	6.7 %
Bromodichloromethane, ug/l	<1.0	---	---
Bromoform, ug/l	<1.0	---	---
Bromomethane, ug/l	<1.0	---	---
Carbon Tetrachloride, ug/l	<1.0	---	---
Chlorobenzene, ug/l	<1.0	100/105 %	4.9 %
Chloroethane, ug/l	<1.0	---	---
2-Chloroethylvinyl Ether, ug/l	<10	---	---
Chloroform, ug/l	<1.0	---	---
Chloromethane, ug/l	<1.0	---	---
Dibromochloromethane, ug/l	<1.0	---	---
1,2-Dichlorobenzene, ug/l	<1.0	---	---
1,3-Dichlorobenzene, ug/l	<1.0	---	---
1,4-Dichlorobenzene, ug/l	<1.0	---	---
1,1-Dichloroethane, ug/l	<1.0	---	---
1,2-Dichloroethane, ug/l	<1.0	---	---
1,1-Dichloroethene, ug/l	<1.0	105/103 %	1.9 %
Trans-1,2-Dichloroethene, ug/l	<1.0	---	---
Cis-1,2-Dichloroethene, ug/l	<1.0	---	---
1,2-Dichloropropane, ug/l	<1.0	---	---
Cis-1,3-Dichloropropene, ug/l	<1.0	---	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46283-20	Method Blank
46283-21	LCS/LCS Duplicate % Recovery
46283-22	LCS % RPD

PARAMETER	46283-20	46283-21	46283-22
Trans-1,3-Dichloropropene, ug/l	<1.0	---	---
Ethylbenzene, ug/l	<1.0	---	---
Methylene Chloride (Dichloromethane), ug/l	<1.0	---	---
1,1,2,2-Tetrachloroethane, ug/l	<1.0	---	---
Tetrachloroethene, ug/l	<1.0	---	---
Toluene, ug/l	<1.0	102/104	1.9 %
1,1,1-Trichloroethane, ug/l	<1.0	---	---
1,1,2-Trichloroethane, ug/l	<1.0	---	---
Trichloroethylene, ug/l	<1.0	94/93	1.1 %
Trichlorofluoromethane, ug/l	<1.0	---	---
Vinyl Chloride, ug/l	<1.0	---	---
Xylenes, ug/l	<1.0	---	---
Acrolein, ug/l	<50	---	---
Acrylonitrile, ug/l	<50	---	---
Surrogate - Toluene-d8	106/97 %	103/104 %	---
Surrogate - 4-Bromofluorobenzene	110/95 %	83/96 %	---
Surrogate - 1,2-Dichloroethane-d4	107/96 %	100/97 %	---
Date Analyzed	11.15/18	---	---
Cyanide (335.3)			
Cyanide (335.3), mg/l	<0.010	92/102 %	10 %
Date Analyzed	11.11.93	---	---
pH (150.1)			
pH, units	---	99/99 %	0 %

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46283-20	Method Blank
46283-21	LCS/LCS Duplicate % Recovery
46283-22	LCS % RPD

PARAMETER	46283-20	46283-21	46283-22
Oil & Grease			
Oil & Grease (413.2), mg/l	<1.0	92/101 %	9.3 %
Date Analyzed	11.18.93	---	---
Chemical Oxygen Demand (410.2)			
Chemical Oxygen Demand, mg/l	<20	98/97 %	1.0 %
Date Analyzed	11.09.93	---	---
Fluoride (340.2)			
Fluoride, mg/l	<0.20	100/104 %	3.9 %
Date Analyzed	11.16.93	---	---
Residual Chloride			
Residual Chlorine, mg/l	<1.0	---	---
Date Analyzed	11.09.93	---	---
Fecal Coliform (MF)			
Fecal Coliform, col/100mls	<1.0	---	---
Date Analyzed	11.08.93	---	---
Phenolics, Total Recoverable			
Phenolics,Total Recoverable, mg/l	<0.010	102/98 %	4.0 %
Date Analyzed	11.21.93	---	---
Cadmium (200.7)			
Cadmium (200.7), mg/l	<0.0050	97/96 %	1.0 %
Date Analyzed	11.23.93	---	---
Chromium (200.7)			
Chromium (200.7), mg/l	<0.010	101/101 %	0 %
Date Analyzed	11.23.93	---	---

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LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46283-20	Method Blank
46283-21	LCS/LCS Duplicate % Recovery
46283-22	LCS % RPD

PARAMETER	46283-20	46283-21	46283-22
Copper (200.7)			
Copper (200.7), mg/l	<0.020	95/95 %	0 %
Date Analyzed	11.23.93	---	---
Nickel (200.7)			
Nickel (200.7), mg/l	<0.020	98/98 %	0 %
Date Analyzed	11.23.93	---	---
Silver (200.7)			
Silver (200.7), mg/l	<0.010	99/100 %	1.0 %
Date Analyzed	11.23.93	---	---
Zinc (200.7)			
Zinc (200.7), mg/l	<0.020	95/95 %	0 %
Date Analyzed	11.23.93	---	---
Lead (239.2)			
Lead (239.2), mg/l	<0.0050	102/102 %	0 %
Date Analyzed	11.11.93	---	---
Biochemical Oxygen Demand (5-Day) (405.1)			
Biochemical Oxygen Demand (5 Day), mg/l	<2.0	108/113 %	4.5 %
Date Analyzed	11.07.93	---	---
Suspended Solids (160.2)			
Suspended Solids (160.2), mg/l	<5.0	94/94 %	0 %
Date Analyzed	11.08.93	---	---
Total Dissolved Solids (160.1)			
Total Dissolved Solids, mg/l	<5.0	94/96 %	2.1 %
Date Analyzed	11.08.93	---	---

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46283-20	Method Blank
46283-21	LCS/LCS Duplicate % Recovery
46283-22	LCS % RPD

PARAMETER	46283-20	46283-21	46283-22
Nitrate + Nitrite-N (353.2)			
Nitrate + Nitrite-N, mg/l	<0.050	87/92 %	5.6 %
Date Analyzed	11.10.93	---	---
Total Phosphorous (365.4)			
Total Phosphorus (365.4), mg/l	<0.10	96/98 %	2.1 %
Date Analyzed	11.19.93	---	---
Total Kjeldahl Nitrogen (351.2)			
Total Kjeldahl Nitrogen-N, mg/l	<0.10	101/102 %	0.99 %
Date Analyzed	11.19.93	---	---
Ammonia-N (350.1)			
Ammonia-N, mg/l	<0.030	93/92 %	1.1 %
Date Analyzed	11.22.93	---	---
Nitrogen (Organic) (351.2/350.1)			
Nitrogen(Organic) (351.2/350.1), mg/l	<0.070	---	---
Date Analyzed	11.22.93	---	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46283-20	Method Blank
46283-21	LCS/LCS Duplicate % Recovery
46283-22	LCS % RPD

PARAMETER	46283-20	46283-21	46283-22
BN-A Extractables (625)			
Acenaphthene, ug/l	<10	85/87 %	2.3 %
Acenaphthylene, ug/l	<10	---	---
Anthracene, ug/l	<10	---	---
Benzo(a)Anthracene, ug/l	<10	---	---
Benzo(b)fluoranthene, ug/l	<10	---	---
Benzo(k)fluoranthene, ug/l	<10	---	---
Benzo(a)pyrene, ug/l	<10	---	---
Benzo(g,h,i)perylene, ug/l	<10	---	---
Benzyl butyl phthalate, ug/l	<10	---	---
bis(2-Chloroethyl)ether, ug/l	<10	---	---
bis(2-Chloroethoxy)methane, ug/l	<10	---	---
bis(2-Ethylhexyl)phthalate, ug/l	<10	---	---
Bis(2-chloroisopropyl)ether, ug/l	<10	---	---
4-Bromophenyl-phenyl-ether, ug/l	<10	---	---
2-Chloronaphthalene, ug/l	<10	---	---
4-Chlorophenyl-phenyl ether, ug/l	<10	---	---
Chrysene, ug/l	<10	---	---
Dibenz(a,h)anthracene, ug/l	<10	---	---
Di-n-butylphthalate, ug/l	<10	---	---
1,3-Dichlorobenzene, ug/l	<10	---	---
1,2-Dichlorobenzene, ug/l	<10	---	---

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46283-20	Method Blank
46283-21	LCS/LCS Duplicate % Recovery
46283-22	LCS % RPD

PARAMETER	46283-20	46283-21	46283-22
1,4-Dichlorobenzene, ug/l	<10	72/76 %	5.4 %
3,3'-Dichlorobenzidine, ug/l	<20	---	---
Diethylphthalate, ug/l	<10	---	---
Dimethylphthalate, ug/l	<10	---	---
2,4-Dinitrotoluene, ug/l	<20	69/72 %	4.3 %
2,6-Dinitrotoluene, ug/l	<20	---	---
Di-n-octylphthalate, ug/l	<10	---	---
Fluoranthene, ug/l	<10	---	---
Fluorene, ug/l	<10	---	---
Hexachlorobenzene, ug/l	<10	---	---
Hexachlorobutadiene, ug/l	<10	---	---
Hexachloroethane, ug/l	<2.0	---	---
Indeno(1,2,3-cd)pyrene, ug/l	<10	---	---
Isophorone, ug/l	<10	---	---
Naphthalene, ug/l	<10	---	---
Nitrobenzene, ug/l	<10	---	---
N-Nitrosodi-N-Propylamine, ug/l	<10	86/97 %	12 %
Phenanthrene, ug/l	<10	---	---
Pyrene, ug/l	<10	98/103 %	5.0 %
1,2,4-Trichlorobenzene, ug/l	<10	81/85 %	4.8 %
4-Chloro-3-methylphenol, ug/l	<10	88/93 %	5.5 %
2-Chlorophenol, ug/l	<10	81/83 %	2.4 %

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by J. Schendel

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LOG NO: S3-46283
Rev-2 12/16/93
Received: 06 NOV 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

CC: Alan Bollinger

Project: AA002.03 Robins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46283-20	Method Blank
46283-21	LCS/LCS Duplicate % Recovery
46283-22	LCS % RPD

PARAMETER	46283-20	46283-21	46283-22
2,4-Dichlorophenol, ug/l	<10	---	---
2,4-Dimethylphenol, ug/l	<10	---	---
2,4-Dinitrophenol, ug/l	<50	---	---
2-Methyl-4,6-dinitrophenol, ug/l	<50	---	---
2-Nitrophenol, ug/l	<10	---	---
4-Nitrophenol, ug/l	<50	82/83 %	1.2 %
Pentachlorophenol, ug/l	<20	74/78 %	5.3 %
Phenol, ug/l	<10	79/82 %	3.7 %
2,4,6-Trichlorophenol, ug/l	<10	---	---
Surrogate-PHL	80 %	80/81 %	---
Surrogate-2FP	81 %	80/83 %	---
Surrogate-TBP	92 %	93/97 %	---
Surrogate-NBZ	85 %	91/93 %	---
Surrogate-2FBP	92 %	92/94 %	---
Surrogate-TPH	99 %	96/100 %	---
Date Extracted	11.11.93	---	---
Date Analyzed	11.17.93	---	---

RECD JAN 03 1994
By J. Schendel

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LOG NO: S3-46283

Received: 06 NOV 93

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CC: Alan Bollinger

Project: AA002.03 Robins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46283-20	Method Blank
46283-21	LCS/LCS Duplicate % Recovery
46283-22	LCS % RPD

PARAMETER	46283-20	46283-21	46283-22
Polynuclear Aromatics (610)			
Acenaphthene, ug/l	<10	72/64 %	12 %
Acenaphthylene, ug/l	<10	---	---
Benzo(a)pyrene, ug/l	<10	68/78 %	14 %
Benzo(g,h,i)perylene, ug/l	<10	---	---
Benzo(b,k)fluoranthene, ug/l	<10	---	---
Chrysene + Benzo(a)anthracene, ug/l	<10	---	---
Fluoranthene, ug/l	<10	---	---
Fluorene, ug/l	<10	72/64 %	12 %
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l	<10	---	---
Naphthalene, ug/l	<10	56/50 %	11 %
Phenanthrene + Anthracene, ug/l	<10	---	---
Pyrene, ug/l	<10	72/68 %	5.7 %
1-Methylnaphthalene, ug/l	<10	---	---
2-Methylnaphthalene, ug/l	<10	---	---
Surrogate - 2-Fluorobiphenyl	62.5	37.0/32.4	---
Surrogate - Expected Value, ug/l	50	50	---
Surrogate - % Actual Recovery	65 %	74/65 %	---
Surrogate - Control Limit	27-123 %	27-123 %	---
Date Extracted	11.11.93	---	---
Date Analyzed	11.15.93	---	---

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LOG NO: S3-46283

Received: 06 NOV 93

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CC: Alan Bollinger

Project: AA002.03 Robins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46283-20	Method Blank
46283-21	LCS/LCS Duplicate % Recovery
46283-22	LCS % RPD

PARAMETER	46283-20	46283-21	46283-22
Cl-Pesticides/PCB (608)			
Aldrin, ug/l	<0.050	108/108 %	0 %
alpha-BHC, ug/l	<0.050	---	---
beta-BHC, ug/l	<0.050	---	---
gamma-BHC, ug/l	<0.050	102/97 %	5.0 %
delta-BHC, ug/l	<0.050	---	---
Chlordane, ug/l	<0.50	---	---
4,4'-DDD, ug/l	<0.10	---	---
4,4'-DDE, ug/l	<0.10	---	---
4,4'-DDT, ug/l	<0.10	130/128 %	1.6 %
Dieldrin, ug/l	<0.10	100/101 %	1.0 %
Endosulfan I, ug/l	<0.050	---	---
Endosulfan II, ug/l	<0.10	---	---
Endosulfan sulfate, ug/l	<0.10	---	---
Endrin, ug/l	<0.10	114/122 %	6.8 %
Endrin Aldehyde, ug/l	<0.10	---	---
Heptachlor, ug/l	<0.050	106/104 %	1.9 %
Heptachlor epoxide, ug/l	<0.050	---	---
Kepone, ug/l	<0.10	---	---
Methoxychlor, ug/l	<0.30	---	---
Toxaphene, ug/l	<2.0	---	---
Aroclor-1016, ug/l	<1.0	---	---

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CC: Alan Bollinger

Project: AA002.03 Robins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46283-20	Method Blank
46283-21	LCS/LCS Duplicate % Recovery
46283-22	LCS % RPD

PARAMETER	46283-20	46283-21	46283-22
Aroclor-1221, ug/l	<1.0	---	---
Aroclor-1232, ug/l	<1.0	---	---
Aroclor-1242, ug/l	<1.0	---	---
Aroclor-1248, ug/l	<1.0	---	---
Aroclor-1254, ug/l	<1.0	---	---
Aroclor-1260, ug/l	<1.0	---	---
Surrogate - Dibutylchlorendate % Rec	135 %	135/134 %	---
Date Extracted	11.10.93	---	---
Date Analyzed	11.19.93	---	---

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REPORT OF RESULTS

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

46283-23 MS/MSD % Recovery (RAFB-SL6-G-E1)
46283-24 MS/MSD % RPD

PARAMETER	46283-23	46283-24
Purgeables (624)		
Benzene	150/141 %	6.2 %
Chlorobenzene	23/43 %	61 %
1,1-Dichloroethene	98/110 %	12 %
Toluene	248/320 %	25 %
Trichloroethylene	112/114 %	1.8 %
Surrogate - Toluene-d8	87/106 %	---
Surrogate - 4-Bromofluorobenzene	103/76 %	---
Surrogate - 1,2-Dichloroethane-d4	96/97 %	---
Cyanide (335.3)		
Cyanide (335.3)	101/103 %	2.0 %
Oil & Grease		
Oil & Grease (413.2)	*F61	*F61

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Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46283-25	MS/MSD % Recovery (RAFB-SL6-C-E1)
46283-26	MS/MSD % RPD

PARAMETER	46283-25	46283-26
Chemical Oxygen Demand (410.2)		
Chemical Oxygen Demand	---	---
Fluoride (340.2)		
Fluoride	96/96 %	0 %
Fecal Coliform (MF)		
Fecal Coliform	---	---
Phenolics, Total Recoverable		
Phenolics,Total Recoverable,	104/110 %	5.6 %
Cadmium (200.7)		
Cadmium (200.7)	97/95 %	2.1 %
Chromium (200.7)		
Chromium (200.7)	102/102 %	0 %
Copper (200.7)		
Copper (200.7)	96/96 %	0 %
Nickel (200.7)		
Nickel (200.7)	98/98 %	0 %
Silver (200.7)		
Silver (200.7)	98/98 %	0 %
Zinc (200.7)		
Zinc (200.7)	94/95 %	1.1 %
Lead (239.2)		
Lead (239.2)	108/103 %	4.7 %
Nitrate + Nitrite-N (353.2)		
Nitrate + Nitrite-N	62/67 %	7.8 %

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Project: AA002.03 Robins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46283-25	MS/MSD % Recovery (RAFB-SL6-C-E1)
46283-26	MS/MSD % RPD

PARAMETER	46283-25	46283-26
Total Phosphorous (365.4)		
Total Phosphorus (365.4)	101/107 %	5.8 %
Total Kjeldahl Nitrogen (351.2)		
Total Kjeldahl Nitrogen-N	103/101 %	2.0 %
Ammonia-N (350.1)		
Ammonia-N	71/74 %	4.1 %
Nitrogen (Organic) (351.2/350.1)		
Nitrogen(Organic) (351.2/350.1)	---	---

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CC: Alan Bollinger

Project: AA002.03 Robins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO 46283-25 SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46283-26 MS/MSD % Recovery (RAFB-SL6-C-E1)
MS/MSD % RPD

PARAMETER	46283-25	46283-26
BN-A Extractables (625)		
Acenaphthene	89/84 %	5.8 %
1,4-Dichlorobenzene	68/61 %	11 %
2,4-Dinitrotoluene	120/119 %	0.84 %
N-Nitrosodi-N-Propylamine	102/88 %	15 %
Pyrene	87/82 %	5.9 %
1,2,4-Trichlorobenzene	71/66 %	7.3 %
4-Chloro-3-methylphenol	80/75 %	6.4 %
2-Chlorophenol	68/65 %	4.5 %
4-Nitrophenol	84/79 %	6.1 %
Pentachlorophenol	62/59 %	5.0 %
Phenol	71/70 %	1.4 %
Surrogate-PHL	74/69 %	---
Surrogate-2FP	73/68 %	---
Surrogate-TBP	106/104 %	---
Surrogate-NBZ	85/82 %	---
Surrogate-2FBP	89/87 %	---
Surrogate-TPH	81/78 %	---
Polynuclear Aromatics (610)		
Acenaphthene	60/58 %	3.4 %
Benzo(a)pyrene	65/74 %	13 %
Fluorene	60/57 %	5.1 %
Naphthalene	68/64 %	6.1 %
Pyrene	60/77 %	25 %
Surrogate - 2-Fluorobiphenyl	57/58 %	---

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CC: Alan Bollinger

Project: AA002.03 Robins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46283-25	MS/MSD % Recovery (RAFB-SL6-C-E1)
46283-26	MS/MSD % RPD

PARAMETER	46283-25	46283-26
Cl-Pesticides/PCB (608)		
Aldrin	100/104 %	3.9 %
gamma-BHC	96/100 %	4.1 %
4,4'-DDT	123/116 %	5.8 %
Dieldrin	99/104 %	4.9 %
Endrin	131/124 %	5.5 %
Heptachlor	102/104 %	1.9 %
Surrogate - Dibutylchlorendate % Rec	120/110 %	---

Methods: EPA SW-846 and 40 CFR Part 136.

*F8 = Confluent growth with coliforms.

*F9 = Confluent growth without coliforms.

*F61 = The recoveries of the matrix spikes are outside advisory limits due to the abundance of the target analyte in the sample.

Linda Wolfe
Linda A. Wolfe

RECD DEC 08 1993

Final Page Of Report

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

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☐ 900 Lakeside Drive, Mobile, AL 36693 — Phone: (205) 666-6633 — Fax (205) 666-6696
☐ 6712 Benjamin Road, Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 — Fax (813) 885-7049

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER	PROJECT NUMBER	PROJECT NAME
	AA002.03	Robins AFB

CLIENT NAME	TELEPHONE/FAX NO.
Engineering-Science	(404) 235-2400

CLIENT ADDRESS	CITY, STATE, ZIP CODE
57 Executive Park, South, NE	Atlanta GA 30329

SAMPLER(S) NAME(S)	CLIENT PROJECT MANAGER
for Jeff Albert	Alan Bollinger

PAGE 1 OF 2

☒ STANDARD TAT
☐ EXPEDITED TAT *
REPORT DUE DATE _____
* SUBJECT TO RUSH FEES

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	MATRIX TYPE: AQUEOUS	NONAQUEOUS	OIL	AIR	REQUIRED ANALYSES: EPA 601/602 5PK	EPA 624 5PK	COD (410.1)	Fluoride (340.2)	FL-MF (SM 9221-C)	Phenols (420.1)	Metals (200.7)	300/TSS/TDS (405.1, 160.2, 160.1)	TOC 5PK	Oil & Grease 5PK	NUMBER OF CONTAINERS SUBMITTED
11-5-93	2400	RAFB-SDI-E-C1	X				5PK	5PK	1	1	1	1	1	1	5PK	5PK	4

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SAVANNAH LABORATORY COPY

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
	10/15	2:00		10/18	1600		11-5-93	1700
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

FOR SAVANNAH LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
	11/6/93	12:20	☑ YES ☐ NO		46283	

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER	PROJECT NUMBER	PROJECT NAME	PAGE	OF
	AA002.03	Robins AFB	2	2

CLIENT NAME: Engineering - Science
TELEPHONE/FAX NO.: (404) 235-2400
CLIENT ADDRESS: 57 Executive Park, South NE
CITY, STATE, ZIP CODE: Atlanta GA 30329
SAMPLER(S) NAME(S): E [signature] for Jeff absent
CLIENT PROJECT MANAGER: Alan Bollinger

MATRIX TYPE: AQUEOUS MATRIX / NONAQUEOUS MATRIX / OIL MATRIX / AIR MATRIX

REQUIRED ANALYSES / NUMBER OF CONTAINERS SUBMITTED

[X] STANDARD TAT
[ ] EXPEDITED TAT *
REPORT DUE DATE ________
* SUBJECT TO RUSH FEES

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	Cyanide	Base Neutrals Acids (625)	PAH (610)	Pesticides (608)		NO3 NO2 Phosphoros Total (353…) 365.4 NH3 + Org nitrogen (350.3, 351.2)			
11-5-93	2400	RAFB-SL1-C-E1	X				1	2	1	1	—	1	—	—	—

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
[signature]	10/15	2:00	Steven P. Kistler	10/18	1600	E [signature]	11-5-93	1700
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

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RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.
L Baker	11/6/93	12:20	[X] YES [ ] NO		46283

LABORATORY REMARKS: 11/8 per John Selander comp samples do not require cyanide KH

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER	PROJECT NUMBER	PROJECT NAME
	AA002.03	Robins AFB

CLIENT NAME: Engineering - Science
TELEPHONE/FAX NO.: (404) 235-2400
CLIENT ADDRESS: 57 Executive Park, South, NE
CITY, STATE, ZIP CODE: Atlanta GA 30329
SAMPLER(S) NAME(S): E [signature] for Jeff Albert
CLIENT PROJECT MANAGER: Alan Bollinger

☒ STANDARD TAT
☐ EXPEDITED TAT *
REPORT DUE DATE ______
* SUBJECT TO RUSH FEES

REQUIRED ANALYSES / NUMBER OF CONTAINERS SUBMITTED

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	~~EPA 601/602~~ SPK	~~EPA 624~~ SPK	COD (410.1)	Flouride (340.2)	FC-MF (SM9221)	Penols (420.1)	metals (200.7, 239.2)	BOD/TSS/TDS 405.1, 160.2, 160.1	~~PH~~ SPK	~~Oil+Grease~~ SPK
11-5-93	2:30	RAFBSL2-~~6~~-E1	X				~~3~~ SPK	~~3~~ SPK	1	1	1	1	1	1	~~1~~ SPK	~~2~~ SPK

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
Bacon	10/15	2:00	Alan P. Kistler	10/18	1600	E [signature]	11-5-93	1700

RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

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RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
L Baker	11/6/93	12:20	☒ YES ☐ NO		46283	

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

PAGE 2 OF 2

P.O. NUMBER	PROJECT NUMBER	PROJECT NAME
	AA002.03	Robins AFB

CLIENT NAME: Engineering - Science
TELEPHONE/FAX NO.: (404) 235-2400
CLIENT ADDRESS: 57 Executive Park, South, NE
CITY, STATE, ZIP CODE: ~~Atlanta~~ GA 30329
SAMPLER(S) NAME(S): [signature] for Jeff Albert
CLIENT PROJECT MANAGER: Alan Bollinger

- [X] STANDARD TAT
- [ ] EXPEDITED TAT *

REPORT DUE DATE ____

* SUBJECT TO RUSH FEES

MATRIX TYPE: AQUEOUS MATRIX / NONAQUEOUS MATRIX / OIL MATRIX / AIR MATRIX

REQUIRED ANALYSES / NUMBER OF CONTAINERS SUBMITTED

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	~~[illegible]~~	Base neutrals/acids (625)	PAH (610)	Pesticides (608)	—	NO3 TKO2 Total Phosphorus (353.2, 365.4) NH3 + org nitrogen TKN (350.3, 351.2)	—	—	—
11-5-93	2430	RAFB-SC2-6-E1	X				~~X~~	2	1	1	—	1	—	—	—

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
Bacon	10/15	2:00	Max P Butler	10/18	1600	[signature]	11-5-93	1200

RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

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RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
L Baker	11/6/93	12:20	[X] YES [ ] NO		46283	

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER	PROJECT NUMBER	PROJECT NAME	PAGE	OF
	AA002.03	Robins AFB	1	2

CLIENT NAME: Engineering-Science — TELEPHONE/FAX NO.: (404) 235-2400

CLIENT ADDRESS: 57 Executive Park South, NE — CITY, STATE, ZIP CODE: Atlanta GA 30329

SAMPLER(S) NAME(S): Alan Bollinger — CLIENT PROJECT MANAGER: Alan Bollinger

☒ STANDARD TAT ☐ EXPEDITED TAT *

REPORT DUE DATE _____

* SUBJECT TO RUSH FEES

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	MATRIX TYPE: AQUEOUS	NONAQUEOUS	OIL	AIR	REQUIRED ANALYSES: EPA 601+602 SPL	EPA 624 SPL	COD (410.1)	Flouride (340.2)	FL-MF(SM9221-B)	Phenols (420.1)	metals (200.7)	BOD/TSS/TDS (405.1, 160.2, 160.1)	DIA SPL	Oil+Grease SPL	NUMBER OF CONTAINERS SUBMITTED: SPL									
11-5-93	0100	RAFB-SLJ-C-E1	X				3	3	1	1	1	1	1	1	8	2										

RECEIVED DEC 08 1993

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
Bacon	10/15	2:00	Alex P. Bisher	10/18	1600		11-5-93	1700
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

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RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
L Baker	11/6/93	12:20	☑ YES ☐ NO		46283	

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER	PROJECT NUMBER	PROJECT NAME	PAGE	OF
	AA002.03	Robins AFB	2	2

CLIENT NAME: Engineering - Science
TELEPHONE/FAX NO.: (404) 235-2400
CLIENT ADDRESS: 57 Executive Park South, NE
CITY, STATE, ZIP CODE: Atlanta GA 30329
SAMPLER(S) NAME(S): Alan Ballinger
CLIENT PROJECT MANAGER: ALAN Ballinger

MATRIX TYPE: AQUEOUS MATRIX; NONAQUEOUS MATRIX; OIL MATRIX; AIR MATRIX

REQUIRED ANALYSES: STANTON SPX Base Neutrals/Acids (625); PAH (610); Pesticides (608); NO3/NO2 Total Phosphorus (365.4); NH3 + Org Nitrogen TKN (350.3, 351.2)

- [X] STANDARD TAT
- [ ] EXPEDITED TAT *

REPORT DUE DATE _____

* SUBJECT TO RUSH FEES

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	NUMBER OF CONTAINERS SUBMITTED: STANTON SPX	Base Neutrals/Acids (625)	PAH (610)	Pesticides (608)	NO3/NO2 Total Phosphorus (365.4)	NH3 + Org Nitrogen TKN (350.3, 351.2)			
11-5-93	0100	RAFB-SL3-C-E1	X				5	2	1	1	-	1	-	-	-

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RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
[signature]	10/15	2:00	[signature]	10/18	1600	[signature]	11-5-93	1700
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

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RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
[signature]	11/6/93	12:20	[X] YES [ ] NO		46283	

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER	PROJECT NUMBER	PROJECT NAME
	AA002.03	Robins AFB

CLIENT NAME	TELEPHONE/FAX NO.
Engineering - Science	(404) 235-2400

CLIENT ADDRESS / CITY, STATE, ZIP CODE: 57 Executive Park, South, NE Atlanta Ga 30329

SAMPLER(S) NAME(S)	CLIENT PROJECT MANAGER
Alan Ballinger	Alan Ballinger

PAGE 1 OF 2

☒ STANDARD TAT
☐ EXPEDITED TAT *

REPORT DUE DATE _____

* SUBJECT TO RUSH FEES

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	MATRIX TYPE: AQUEOUS	NONAQUEOUS	OIL	AIR	REQUIRED ANALYSES: EPA 601/602 SPK	EPA 624 SPK	COD (410.1)	Fluoride (340.2)	FC-MF (SM922-C)	Phenols (420.1)	Metals (200.7, 239.2)	BOD (405.1, 160.2, 160.1)	PH SPK	Oil & Grease (413.1) SPK
							NUMBER OF CONTAINERS SUBMITTED: 6 SPK	6 SPK	1	1	1	1	1	1	1 SPK	1 SPK
11-5-93	2446	RAFB-SL4-C-E1	X				6	6	1	1	1	1	1	1	1	1

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RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
[signature]	10/15	2:00	[signature]	10/18	1600	[signature]	11-5-93	1700
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

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RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.
[signature]	11/6/93	12:20	☑ YES ☐ NO		46283

LABORATORY REMARKS

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER	PROJECT NUMBER	PROJECT NAME
	AA002.03	Robins AFB

CLIENT NAME	TELEPHONE/FAX NO.
Engineering-Science	(404)235-2400

CLIENT ADDRESS / CITY, STATE, ZIP CODE: 57 Executive Park South, NE, Atlanta Ga 30329

SAMPLER(S) NAME(S)	CLIENT PROJECT MANAGER
Alan Bollinger	Alan Bollinger

PAGE 2 OF 2

☒ STANDARD TAT
☐ EXPEDITED TAT *
REPORT DUE DATE _____
* SUBJECT TO RUSH FEES

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	MATRIX: AQUEOUS	MATRIX: NONAQUEOUS	MATRIX: OIL	MATRIX: AIR	REQUIRED ANALYSES: Superfund SOK Base Neutrals Acids (625)	PAH (610)	Pesticides (608)	NO2 TNO2 Total Phosphorus (365.4)	NH3+org Nitrogen TKN (350.3, 351.2)	NUMBER OF CONTAINERS SUBMITTED
11-5-93	2448	RAFB-SL4-C-E1	X				SOK X	2	1	1	—	1 — — —

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RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
BACON	10/15	2.00	Alex P. Butler	10/18	1600	[illegible]	11-5-93	1700
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

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RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.
L Baker	11/6/93	12:20	☑ YES ☐ NO		46283

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER	PROJECT NUMBER	PROJECT NAME
	AA002.03	Robins AFB

CLIENT NAME: Engineering-Science
TELEPHONE/FAX NO.: (404) 235-2400
CLIENT ADDRESS: 57 Executive Park, South NE
CITY, STATE, ZIP CODE: Atlanta Ga 30329
SAMPLER(S) NAME(S): Alan Bollinger
CLIENT PROJECT MANAGER: Alan Bollinger

PAGE 1 OF 2

☒ STANDARD TAT
☐ EXPEDITED TAT *

REPORT DUE DATE ____________
* SUBJECT TO RUSH FEES

REQUIRED ANALYSES / NUMBER OF CONTAINERS SUBMITTED

DATE	TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	~~EPA 601/602~~ SPK	~~EPA 624~~ 6PK	COD (410.1)	Flouride (340.2)	FC-MF (SM9221-D)	Penols (420.1)	Metals (200.7, 239.2)	BOD, TSS, TDS (405.1, 160.2, 160.4)	~~PH~~ SPK	~~Oil/grease~~ SPK
11-5-93	2435	RHFB-SL5-C-E1	X				~~2~~ SPK	~~2~~ SPK	1	1	1	1	1	1	~~1~~ SPK	~~2~~ SPK

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
[signature]	10/15	2:00	Steve P. Kistler	10/18	1600	[signature]	11-5-93	1700
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

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RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.
J Baker	11/6/93	12:20	☑ YES ☐ NO		46283

LABORATORY REMARKS

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER	PROJECT NUMBER	PROJECT NAME
	AA002.03	Robins AFB

CLIENT NAME: Engineering - Science
TELEPHONE/FAX NO.: (404) 235-2400
CLIENT ADDRESS: 57 Executive Park, South
CITY, STATE, ZIP CODE: NE, Atlanta GA 30329
SAMPLER(S) NAME(S): Alan Bollinger
CLIENT PROJECT MANAGER: Alan Bollinger

PAGE 2 OF 2

[X] STANDARD TAT
[ ] EXPEDITED TAT *
REPORT DUE DATE ______
* SUBJECT TO RUSH FEES

MATRIX TYPE: AQUEOUS MATRIX / NONAQUEOUS MATRIX / OIL MATRIX / AIR MATRIX

REQUIRED ANALYSES — NUMBER OF CONTAINERS SUBMITTED

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	~~Ethanol~~ 8K	Base Neutral Acids (625)	PAH (610)	Pesticides (608)		NO3 TNO2 Phosphoros (365.4) total Phosphoros (353.2) NH3 + org Nitrogen TKN (350.3, 351.2)			
11-5-93	2435	RAFB-SL5-C-E1	X				~~8K~~	2	1	1	-	1	-	-	-

EAS

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RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
BACOO	10/15	2:00	Alex P. Kistler	10/18	1600	[signature]	11-5-93	1700
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

FOR SAVANNAH LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
J Baker	11/6/93	12:20	[X] YES [ ] NO		46283	

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER	PROJECT NUMBER	PROJECT NAME
	AA062.03	Robbins AFB

CLIENT NAME	TELEPHONE/FAX NO.
Engineering - Science	(404) 235-2400

CLIENT ADDRESS	CITY, STATE, ZIP CODE
57 Executive Park, South, NE	Atlanta Ga 30329

SAMPLER(S) NAME(S)	CLIENT PROJECT MANAGER
	Allen Bollinger

PAGE 1 OF 2

☒ STANDARD TAT
☐ EXPEDITED TAT *
REPORT DUE DATE
* SUBJECT TO RUSH FEES

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	MATRIX TYPE: AQUEOUS	NONAQUEOUS	OIL	AIR	REQUIRED ANALYSES: EPA 601+602 SPK	EPA 624 SPK	COD (410.1)	Floride (340.2)	FC-MF (SM9221-C)	Penols (420.1)	Metals (200.7 239.2)	BOD/TSS/TDS (405.1, 160.2, 160.1)	DIT SPK	Oil + Grease SPK
							NUMBER OF CONTAINERS SUBMITTED: 3	3 SPK	1	1	1	1	1	1	1 SPK	2 SPK
11-5-93	2415	RAFB-SL6-C-E1	X													

RECD DEC 08 1993

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
DACON	10/15	2:00	Steve P. Kistler	10/18	1600		11-5-93	1000
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

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RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.
L Baker	11/6/93	12:20	☑ YES ☐ NO		46283

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER	PROJECT NUMBER	PROJECT NAME	PAGE	OF
	AA002.03	Robins AFB	2	2

CLIENT NAME: Engineering, Science — TELEPHONE/FAX NO.: (404)235-2400

CLIENT ADDRESS: 57 Executive Park, South, NE — CITY, STATE, ZIP CODE: Atlanta GA 30329

SAMPLER(S) NAME(S): E — CLIENT PROJECT MANAGER: Allan Bollinger

MATRIX TYPE: AQUEOUS MATRIX / NONAQUEOUS MATRIX / OIL MATRIX / AIR MATRIX

REQUIRED ANALYSES: Extractable SPL, Base Neutrals/Acids (625), PAH (610), Pesticides (608), NO3 TNO2 Total Phosphorus (365.4), NH3+Org Nitrogen, TKN (350.3, 351.2)

☒ STANDARD TAT
☐ EXPEDITED TAT *

REPORT DUE DATE _____

* SUBJECT TO RUSH FEES

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS SUBMITTED
11-5-93	2415	RAFB-SLG-C-E1	6 2 1 1 — 1 — — —

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RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
[signature]	10/15	2:00	Steve P. Griffin	10/18	1600	[signature]	11-5-93	1700
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

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RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.
F Baker	11/6/93	12:20	☑ YES ☐ NO		46283

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER:
PROJECT NUMBER: AA002.03
PROJECT NAME: Robins AFB
CLIENT NAME: Engineering - Science
TELEPHONE/FAX NO.: (404) 235-2400
CLIENT ADDRESS: 57 Executive Park, South, NE,
CITY, STATE, ZIP CODE: Atlanta GA 30329
SAMPLER(S) NAME(S): E V
CLIENT PROJECT MANAGER: Alan Bollinger

PAGE 1 OF 2

[X] STANDARD TAT
[ ] EXPEDITED TAT *
REPORT DUE DATE ______
* SUBJECT TO RUSH FEES

MATRIX TYPE: AQUEOUS MATRIX / NONAQUEOUS MATRIX / OIL MATRIX / AIR MATRIX

REQUIRED ANALYSES — NUMBER OF CONTAINERS SUBMITTED

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	~~EPA 601/602~~ SPK	~~EPA 624~~ SPK	COD (410.1)	Flouride (340.2)	FC-MF-(SM9221-C)	Penols (420.1)	metals (200.7) (239.2)	BOD/TSS/TDS (405.1, 160.2, 160.1)	~~pH~~ SPK	~~[illegible]~~ SPK
11-5-93	2450	RAFB-SL7-~~6~~-E1	X				~~3~~ SPK	~~3~~ SPK	1	1	1	1	1	1	~~1~~ SPK	~~1~~ SPK

E.A.S.

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
[signature]	10/15	2:00	Steve P. Kistler	10/18	1600	[signature]	11-5-93	1700

RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

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RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.
L Baker	11/6/93	12:20	[X] YES [ ] NO		46283

LABORATORY REMARKS

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☐ 900 Lakeside Drive, Mobile, AL 36693 — Phone: (205) 666-6633 — Fax (205) 666-6696
☐ 6712 Benjamin Road, Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 — Fax (813) 885-7049

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER	PROJECT NUMBER	PROJECT NAME	PAGE	OF
	AA002.03	Robins AFB	2	2

CLIENT NAME	TELEPHONE/FAX NO.
Engineering - Science	(404) 235-2400

CLIENT ADDRESS	CITY, STATE, ZIP CODE
57 Executive Park South NE	Atlanta GA 30329

SAMPLER(S) NAME(S)	CLIENT PROJECT MANAGER
[signature]	Alan Bollinger

☒ STANDARD TAT
☐ EXPEDITED TAT *
REPORT DUE DATE _____
* SUBJECT TO RUSH FEES

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	MATRIX TYPE: AQUEOUS	NONAQUEOUS	OIL	AIR	REQUIRED ANALYSES: NUMBER OF CONTAINERS SUBMITTED — Extractable GPK	Base Neutrals/Acids (625)	PAH (610)	Pesticides (608)	NO3 TN82 TOTAL PHOSPHOROS (353.2)	NH3 + ORG Nitrogen (350.3 351.2)	TKN (351.2)			
11-5-93	2450	RAFB-SL7-C-E1	X				SPK X	2	1	1	-	1	-	-	-	

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RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
Bacon	10/15	2:00	Steven P. Kistler	10/18	1600	[signature]	11-5-93	1700
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

FOR SAVANNAH LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
[signature]	11/6/93	12:20	☑ YES ☐ NO		46283	

SAVANNAH LABORATORY COPY

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

☒ 5102 LaRoche Avenue, Savannah, GA 31404 — Phone: (912) 354-7858 — Fax (912) 352-0165
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☐ 6712 Benjamin Road, Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 — Fax (813) 885-7049

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER	PROJECT NUMBER	PROJECT NAME
	AA002.03	Robins AFB

CLIENT NAME	TELEPHONE/FAX NO.
Engineering - Science	(404) 235-2400

CLIENT ADDRESS / CITY, STATE, ZIP CODE: 57 Executive Park, South, NE, Atlanta GA 30329

SAMPLER(S) NAME(S)	CLIENT PROJECT MANAGER
E ~~G~~ for Brian Jeter	Alan Bollinger

PAGE 1 OF 2

☒ STANDARD TAT
☐ EXPEDITED TAT *
REPORT DUE DATE
* SUBJECT TO RUSH FEES

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	MATRIX TYPE	REQUIRED ANALYSES: NUMBER OF CONTAINERS SUBMITTED								
								EPA 601+602 SPK	EPA 624 SPK	COD (410.1)	Flouride (340.2)	TC-MF (Sm9221-C)	Phenols (420.1)	metals (200.7, 239.2)	BOD (405.1) TSS (160.2, 160.1)	Oil + Grease SPK
11-5-93	0105	RAFB-SL8-C-E1	X					3 SPK	3 SPK	1	1	1	1	1	1	1 SPK

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RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
[signature]	10/15	2:00	[signature]	10/18	1600	[signature]	11-5-93	1700
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

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RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
[signature]	11/6/93	12:20	☑ YES ☐ NO		46283	

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER	PROJECT NUMBER	PROJECT NAME	PAGE	OF
	AA002.03	Robins AFB	2	2

CLIENT NAME	TELEPHONE/FAX NO.
Engineering - Science	(404) 235-2400

CLIENT ADDRESS	CITY, STATE, ZIP CODE
57 Executive Park, South, NE, Atlanta GA 30329	

SAMPLER(S) NAME(S)	CLIENT PROJECT MANAGER
for Brian Jeter	Alan Ballinger

☒ STANDARD TAT
☐ EXPEDITED TAT *
REPORT DUE DATE _____
* SUBJECT TO RUSH FEES

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	MATRIX TYPE: AQUEOUS	NONAQUEOUS	OIL	AIR	NUMBER OF CONTAINERS SUBMITTED	STANDARD SK Base Neutrals Acids (625)	PAH (610)	Pesticides (608)	Volatiles (624)	Phosphorus (365.4)	NH3 + Org Nitrogen (350.3 + 351.2)	TKN (351.2)			
11-5-93	0105	RAFB-SLG-C-E1	X				6	1	2	1	1	-	1	-	-	-	

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RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
[signature]	10/15	2:10	[signature]	10/18	1600	[signature]	11-5-93	1702
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

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RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
L Baker	11/6/93	12:20	☑ YES ☐ NO		46283	

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER	PROJECT NUMBER	PROJECT NAME
	AA002.03	Robins AFB

CLIENT NAME	TELEPHONE/FAX NO.
Engineering - Science	(404) 235-2400

CLIENT ADDRESS	CITY, STATE, ZIP CODE
57 Executive Park, South, NE	Atlanta GA 30329

SAMPLER(S) NAME(S)	CLIENT PROJECT MANAGER
[signature]	Alan Bollinger

PAGE 1 OF 2

☒ STANDARD TAT
☐ EXPEDITED TAT *
REPORT DUE DATE _____
* SUBJECT TO RUSH FEES

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	MATRIX: AQUEOUS	MATRIX: NONAQUEOUS	MATRIX: OIL	MATRIX: AIR	REQUIRED ANALYSES: EPA 601+602 SPK	EPA 624 SPK	COD (410.1)	Flouride (340.2)	FC-MF(SM9221-C)	Phenols (420.1)	Metals (200.7)	BOD/TSS/TDS (405.1, 160.2, 160.1)	PAH SPK	624+Carbon SPK
							NUMBER OF CONTAINERS SUBMITTED									
11-5-93	2430	RAFB-SW16-G-E1	X				3 SPK	3 SPK	1	1	1	1	1	1	1 SPK	2 SPK

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RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
[signature]	10/15	2:11	Steve P. Kistler	10/18	1600	[signature]	11-5-93	1700
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

FOR SAVANNAH LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.
L Baker	11/6/93		☑ YES ☐ NO		46283

LABORATORY REMARKS

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

AA002.03 Robins AFB

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

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☐ 6712 Benjamin Road, Suite 100, Tampa, FL 33634 Phone: (813) 885-7427 Fax (813) 885-7049

P.O. NUMBER:
PROJECT NUMBER: AA002.03
PROJECT NAME: Robins AFB
CLIENT NAME: Engineering-Science
TELEPHONE/FAX NO.: (404) 235-2400
CLIENT ADDRESS: 57 Executive Park South NE
CITY, STATE, ZIP CODE: Atlanta Ga 30329
SAMPLER(S) NAME(S): [signature]
CLIENT PROJECT MANAGER: Alan Bollinger

PAGE 2 OF 2

☒ STANDARD TAT
☐ EXPEDITED TAT *
REPORT DUE DATE ______
* SUBJECT TO RUSH FEES

MATRIX TYPE: AQUEOUS MATRIX / NONAQUEOUS MATRIX / OIL MATRIX / AIR MATRIX

REQUIRED ANALYSES — NUMBER OF CONTAINERS SUBMITTED

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	~~Cyanide~~ spk	Base Neutrals Acids	PAH (625)	(610) Pesticides (608)		NO3 TNO2 Total Phosphoros (353.2) (365.4)	NH3+org Nitrogen TKN (350.3 351.2)		
11-5-93	2430	RAFB-SL16-C-C1	X				8k X	2	1	1	–	1	–	–	–

EAS

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RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
[signature]	10/15	12:00	[signature]	10/19	1600	[signature]	11-5-93	1700
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

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RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
L Baker	11/6/93	17:20	☑ YES ☐ NO		46283	

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ENGINEERING-SCIENCE

1211

CHAIN OF CUSTODY RECORD

ES JOB NUMBER	PROJECT NAME\LOCATION
AA002.03	Robins AFB, Warner Robins, GA

SAMPLER(S): (Signature) Alan Ballinger

SHIP TO: Savannah Labs, 5102 LaRoche Ave, Savannah, GA 31404

Date	Time	Sample Description	Number of Containers	PRESERVATIVE REQUIRED: HCL	ANALYSES REQUIRED: HCL, EPA 601/602, EPA 624	Sample Type	Matrix	Remarks
11-5-93	~~2400~~ ES	RAFB-TB1-G-E1	(EAS) ~~1~~ 6	X	X	G C	W	
11-5-93	2400	RAFB-SL1-G-E1	6	X	X	G C	W	
11-5-93	2430	RAFB-SL2-G-E1	6	X	X	G C	W	
11-5-93	0100	RAFB-SL3-G-E1	6	X	X	G C	W	
11-5-93	~~24~~48	RAFB-SL4-G-E1	6	X	X	G C	W	
11-5-93	2435	RAFB-SL5-G-E1	6	X	X	G C	W	
11-5-93	2415	RAFB-SL6-G-E1	18	X	X	G C	W	MS/MSD
11-5-93	2450	RAFB-SL7-G-E1	6	X	X	G C	W	
11-5-93	0105	RAFB-SL8-G-E1	6	X	X	G C	W	
11-5-93	2430	RAFB-SL16-G-E1	6	X	X	G C	W	
						G C		
						G C		
						G C		
						G C		
						G C		
						G C		
						G C		
						G C		

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Relinquished by: (Signature)	Date/Time	Received for Laboratory by:	Date/Time	Remarks:
	11-5-93 1700	Y Baker 46283	11/6/93 12:20	Airbill#: 8446985234

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G - Grab
C - Composite

ENGINEERING-SCIENCE

1219

CHAIN OF CUSTODY RECORD

ES JOB NUMBER	PROJECT NAME\LOCATION
AA002.03	Robins AFB, Warner Robins GA

SAMPLER(S): (Signature)

E for Jeff Albert

SHIP TO: Savannah Labs
5102 LaRoche Ave
Savannah GA 31404

PRESERVATIVE REQUIRED: HCL | HCL | NaOH | 4°C | H_2SO_4

ANALYSES REQUIRED: EPA 601+602 | EPA 624 | Cyanide | pH | Oil & Grease

Date	Time	Sample Description	Number of Containers	Sample Type	Matrix	Remarks
11-5-93	2400	RAFB-SL1-G--E1	4	(G) C	W	
				G C	W	
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		

EA

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Relinquished by: (Signature)	Date/Time	Received for Laboratory by:	Date/Time	Remarks:
E	11-5-93 1700	J Baker 46283	11/6/93 12:20	Airbill#: 8446945234

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C - Composite

ENGINEERING-SCIENCE

CHAIN OF CUSTODY RECORD

1217

ES JOB NUMBER	PROJECT NAME\LOCATION
AA002.03	Robins AFB, Warner Robins, GA

SAMPLER(S): (Signature)

E for Jeffrey Albert.

SHIP TO: Savannah Labs
5102 La Roche Ave
Savannah GA 31404

PRESERVATIVE REQUIRED: HCL | HCL | NaOH | 4°C | H_2SO_4

ANALYSES REQUIRED: EPA 601+602 | EPA 624 | Cyanide | pH | Oil+Grease

Date	Time	Sample Description	Number of Containers	Sample Type	Matrix	Remarks
11-5-93	2430	RAFB-SL2-G-E1	4	(G) C	W	
				G C	W	
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		

E

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Relinquished by: (Signature)	Date/Time	Received for Laboratory by:	Date/Time	Remarks:
E	11-5-93 1700	J Baker 46283	11/6/93 12:20	Airbill#: 8446985234

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G - Grab
C - Composite

ENGINEERING-SCIENCE

1221

CHAIN OF CUSTODY RECORD

ES JOB NUMBER	PROJECT NAME\LOCATION
AA002.03	Robins AFB, Warner - Robins, Ga.

SAMPLER(S): (Signature)
Alan Ballard

SHIP TO: Savannah, Ga.
5102 LaRoche Ave
Savannah, Ga 31404

PRESERVATIVE REQUIRED: HCL, HCL, NaOH, 4°C, H_2SO_4

ANALYSES REQUIRED: EPA 601+602, ERA 624, Cyanide, pH, oil & Grease

Date	Time	Sample Description	Number of Containers	Sample Type	Matrix	Remarks
11-5-93	0100	RAFB-SL3-G-E1	4	(G) C	W	
				G C	W	
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
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				G C		
				G C		
				G C		
				G C		
				G C		

GAS

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Relinquished by: (Signature)	Date/Time	Received for Laboratory by:	Date/Time	Remarks:
[signature]	11-5-93 1700	J Baker 46283	11/6/93 LAB ~~10:22~~ 12:20	Airbill#: 8446985234

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ENGINEERING-SCIENCE

CHAIN OF CUSTODY RECORD

1214

ES JOB NUMBER	PROJECT NAME\LOCATION
AA002.03	Robins AFB, Warner-Robins, GA

SAMPLER(S): (Signature)
Alan Ballinger

PRESERVATIVE REQUIRED: HCL, HCL, NaOH, 4°C, H_2SO_4

ANALYSES REQUIRED: EPA 1602, EPA 624, CYANIDE, PH, OIL & GREASE

SHIP TO: Savannah Labs
5102 LaRoche Ave
Savannah, GA 31404

Date	Time	Sample Description	Number of Containers	Sample Type	Matrix	Remarks
11-5-93	2444	RAFB-SL4-G-E1	4	(G) C	W	
				G C	W	
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
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Relinquished by: (Signature)	Date/Time	Received for Laboratory by:	Date/Time	Remarks:
[signature]	11-5-93 1200	[signature] 46283	11/6/93 12:20	Airbill#: 844698523 4

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G - Grab
C - Composite

ENGINEERING-SCIENCE
CHAIN OF CUSTODY RECORD

1215

ES JOB NUMBER	PROJECT NAME\LOCATION
AA002.03	Robins AFB, Warner-Robins Ga

SAMPLER(S): (Signature)
Alan Ballenger

SHIP TO: Savannah Labs
5102 La Roche Ave.
Savannah, Ga 31404

PRESERVATIVE REQUIRED: HCL, HCL, NaOH, 4°C, H2SO4

ANALYSES REQUIRED: EPA 601/602, EPA 624, Cyanide, PH, oil & Grease

Date	Time	Sample Description	Number of Containers	Sample Type	Matrix	Remarks
11-5-93	2435	RAFB-SLS-G-E1	4	(G) C	W	
				G C	W	
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
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EAS

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Relinquished by: (Signature)	Date/Time	Received for Laboratory by:	Date/Time	Remarks:
[signature]	11-5-93 1700	L Baker 46283	11/6/93 12:20	Airbill#: 8446485234

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G - Grab
C - Composite

ENGINEERING-SCIENCE

1224

CHAIN OF CUSTODY RECORD

ES JOB NUMBER	PROJECT NAME\LOCATION
AA002.03	Robins AFB GA

SAMPLER(S): (Signature)

E. [signature]

PRESERVATIVE REQUIRED: H2SO4 | HNO3 | 4C | H2SO4 | H2SO4 | H2SO4 | 4C | 4C

ANALYSES REQUIRED: Oil & Grease | Cyanide | 200.7/239.2 | 340.2 | 350.3/351.2 | 353.2/365.4 | 420.1 | 610/625 | 604

SHIP TO:

Date	Time	Sample Description	Number of Containers	Sample Type	Matrix	Remarks
11-5-93	2415	RAFB-SL6-G-E1	3	G C	H2O	
11-5-93	2415	RAFB-SL6-C-E1	8	G C	H2O	
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
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Relinquished by: (Signature)	Date/Time	Received for Laboratory by:	Date/Time	Remarks:
E [signature]	11-5-93 1700	L Baker 46283	11/6/93 12:20	Airbill#: 844628 5234

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ENGINEERING-SCIENCE

1223

CHAIN OF CUSTODY RECORD

ES JOB NUMBER	PROJECT NAME\LOCATION
AA002.03	Robins AFB GA

SAMPLER(S): (Signature)

E

SHIP TO:

PRESERVATIVE REQUIRED: H_2SO_4 | HOH | HNO_3 | 4C | H_2SO_4 | H_2SO_4 | H_2SO_4 | 4C | 4C

ANALYSES REQUIRED: Oil & Grease | Cyanide | 200.7 231.2 | 340.2 | 350.3 351.2 | 352.2 365.4 | 410.1 420.1 | 610 625 | 608

Date	Time	Sample Description	Number of Containers	Sample Type	Matrix	Remarks
11-5-93	2415	RAFB-SL6-G-E1	3	(G) C	H2O	MS/MSD
11-5-93	2415	RAFB-SL6-C-E1	8	G (C)	H2O	MS/MSD
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		

E

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Relinquished by: (Signature)	Date/Time	Received for Laboratory by:	Date/Time	Remarks:
E	11-5-93 1700	L Baker 46283	11/6/93 12:20	Airbill#: 844698523 4

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G - Grab
C - Composite

ENGINEERING-SCIENCE
CHAIN OF CUSTODY RECORD

1218

ES JOB NUMBER	PROJECT NAME\LOCATION
AA00203	Robins AFB, Warner-Robins, GA

SAMPLER(S): (Signature)

SHIP TO: Savannah Labs
5102 LaRoche Ave
Savannah, Ga
31404

PRESERVATIVE REQUIRED: HCL, HCL, NaOH, 4°C, H_2SO_4

ANALYSES REQUIRED: EPA 601/602, EPA 624, Cyanide, pH, Oil & Grease

Date	Time	Sample Description	Number of Containers	Sample Type	Matrix	Remarks
11-5-93	2415	RAFB-SL6-G-E1	4	(G) C	W	
				G C	W	
				G C		
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RECD DEC 08 1993

Relinquished by: (Signature)	Date/Time	Received for Laboratory by:	Date/Time	Remarks:
	11-5-93 1700	L Baker 46283	11/6/93 12:20	Airbill#: 844698523

Distribution: Original, yellow and pink sheets sent to lab. Gold retained by field personnel. Lab retains original and sends yellow and pink copies with analytical report.

G - Grab
C - Composite

ENGINEERING-SCIENCE

1220

CHAIN OF CUSTODY RECORD

ES JOB NUMBER	PROJECT NAME\LOCATION
AA002.03	Robins AFB, Warner Robins GA

SAMPLER(S): (Signature)

SHIP TO: Savannah Labs
5102 LA Roche Ave
Savannah GA 31404

PRESERVATIVE REQUIRED

ANALYSES REQUIRED

Date	Time	Sample Description	Number of Containers	EPA 601+602 HCL	EPA 624 HCL	Cyanide NaOH	pH 4°C	Oil + Grease H_2SO_4	Sample Type	Matrix	Remarks
11-5-93	1450	NAFB-SL7-G-E1	4		X	X	X		(G) C	W	
									G C	W	
									G C		
									G C		
									G C		
									G C		
									G C		
									G C		
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RECD LIEU 08 1993

Relinquished by: (Signature)	Date/Time	Received for Laboratory by:	Date/Time	Remarks:
	11-5-93 1700	46283	11/6/93 12:20	Airbill#: 844698585234

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G - Grab
C - Composite

ENGINEERING-SCIENCE
CHAIN OF CUSTODY RECORD

ES JOB NUMBER: AA002.03

PROJECT NAME\LOCATION: Robins AFB GA

SAMPLER(S): (Signature) [signature] for Brian Jeter

PRESERVATIVE REQUIRED: NaOH, 4C, H2SO4

SHIP TO: Savannah Labs

Date	Time	Sample Description	Number of Containers	Cyanide	pH	Oil grease	Sample Type	Matrix	Remarks
11-5-93	0105	RAFB-SL8-G-E1	4	X	X	X	(G) C	H2O	
							G C		
							G C		
							G C		
							G C		
							G C		
							G C		
							G C		RECD DEC 08 1993
							G C		
							G C		
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							G C		
							G C		
							G C		
							G C		

Relinquished by: (Signature)	Date/Time	Received for Laboratory by:	Date/Time	Remarks:
[signature]	11-5-93 1200	J Baker 46283	11/6/93 12:20	Airbill#: 8446985234

Distribution: Original, yellow and pink sheets sent to lab. Gold retained by field personnel. Lab retains original and sends yellow and pink copies with analytical report.

G - Grab
C - Composite

ENGINEERING-SCIENCE

1216

CHAIN OF CUSTODY RECORD

ES JOB NUMBER	PROJECT NAME\LOCATION
AA002.03	Robins AFB GA

SAMPLER(S): (Signature)

E. U

SHIP TO: Savannah Labs
5102 LaRoche Ave
Savannah GA 31404

PRESERVATIVE REQUIRED: HNO3 | 4°C | H2SO4

ANALYSES REQUIRED: Cyanide | PH | Oil+Grease

Date	Time	Sample Description	Number of Containers	Sample Type	Matrix	Remarks
11-5-93	2430	RAFB-SL16-G-E1	4	G C	liq	
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
				G C		
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RECD DEC 0 1993

Relinquished by: (Signature)	Date/Time	Received for Laboratory by:	Date/Time	Remarks:
E. U	11-5-93 1700	L Baker 46283	11/6/93 12:20	Airbill#: 8446985-234

Distribution: Original, yellow and pink sheets sent to lab. Gold retained by field personnel.
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G - Grab
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LABORATORY DATA PACKAGE FOR THE DECEMBER 4, 1993 RAIN EVENT

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S3-46908

Received: 07 DEC 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46908-1	RAFB-SL9-G-E1	12-04-93
46908-2	RAFB-SL10-G-E1	12-04-93
46908-3	RAFB-SL11-G-E1	12-04-93
46908-4	RAFB-SL12-G-E1	12-04-93
46908-5	RAFB-SL13-G-E1	12-04-93

PARAMETER	46908-1	46908-2	46908-3	46908-4	46908-5
Purgeables (624)					
Benzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene, ug/l	<1.0	<1.0	8.9	<1.0	<1.0
Chloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chloroethylvinyl Ether, ug/l	<10	<10	<10	<10	<10
Chloroform, ug/l	2.4	<1.0	<1.0	<1.0	<1.0
Chloromethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene, ug/l	<1.0	<1.0	3.1	<1.0	<1.0
1,3-Dichlorobenzene, ug/l	<1.0	<1.0	1.0	<1.0	<1.0
1,4-Dichlorobenzene, ug/l	<1.0	<1.0	1.4	<1.0	<1.0
1,1-Dichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Cis-1,2-Dichloroethene, ug/l	<1.0	<1.0	6.1	<1.0	<1.0

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S3-46908

Received: 07 DEC 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46908-1	RAFB-SL9-G-E1	12-04-93
46908-2	RAFB-SL10-G-E1	12-04-93
46908-3	RAFB-SL11-G-E1	12-04-93
46908-4	RAFB-SL12-G-E1	12-04-93
46908-5	RAFB-SL13-G-E1	12-04-93

PARAMETER	46908-1	46908-2	46908-3	46908-4	46908-5
1,2-Dichloropropane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Cis-1,3-Dichloropropene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Trans-1,3-Dichloropropene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Methylene Chloride (Dichloromethane), ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene, ug/l	<1.0	1.1	<1.0	<1.0	1.5
1,1,1-Trichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethylene, ug/l	1.0	<1.0	<1.0	<1.0	<1.0
Trichlorofluoromethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Xylenes, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Acrolein, ug/L	<50	<50	<50	<50	<50
Acrylonitrile, ug/l	<50	<50	<50	<50	<50
Surrogate - Toluene-d8	93 %	92 %	93 %	90 %	93 %
Surrogate - 4-Bromofluorobenzene	96 %	95 %	95 %	96 %	95 %
Surrogate - 1,2-Dichloroethane-d4	106 %	104 %	107 %	106 %	105 %
Date Analyzed	12.18.93	12.18.93	12.18.93	12.18.93	12.18.93

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SL ***SAVANNAH LABORATORIES***
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S3-46908

Received: 07 DEC 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46908-1	RAFB-SL9-G-E1	12-04-93
46908-2	RAFB-SL10-G-E1	12-04-93
46908-3	RAFB-SL11-G-E1	12-04-93
46908-4	RAFB-SL12-G-E1	12-04-93
46908-5	RAFB-SL13-G-E1	12-04-93

PARAMETER	46908-1	46908-2	46908-3	46908-4	46908-5
Cyanide (335.3)					
Cyanide (335.3), mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Date Analyzed	12.15.93	12.15.93	12.15.93	12.15.93	12.15.93
pH (150.1)					
pH, units	6.0	6.4	6.1	8.3	6.3
Date Analyzed	12.07.93	12.07.93	12.07.93	12.07.93	12.07.93
Oil & Grease					
Oil & Grease (413.2), mg/l	<1.0	<1.0	<1.0	3.6	<1.0
Date Analyzed	12.22.93	12.22.93	12.22.93	12.22.93	12.22.93

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Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46908-6	RAFB-SL9-C-E1	12-04-93
46908-7	RAFB-SL10-C-E1	12-04-93
46908-8	RAFB-SL11-C-E1	12-04-93
46908-9	RAFB-SL12-C-E1	12-04-93
46908-10	RAFB-SL13-C-E1	12-04-93

PARAMETER	46908-6	46908-7	46908-8	46908-9	46908-10
Chemical Oxygen Demand (410.2)					
Chemical Oxygen Demand, mg/l	35	<20	37	69	28
Date Analyzed	12.08.93	12.08.93	12.08.93	12.08.93	12.08.93
Fluoride (340.2)					
Fluoride, mg/l	<0.20	<0.20	<0.20	<0.20	<0.20
Date Analyzed	12.16.93	12.16.93	12.16.93	12.16.93	12.16.93
Biochemical Oxygen Demand (5-Day) (405.1)					
Biochemical Oxygen Demand (5 Day), mg/l	<2.0	<2.0	2.9	13	<2.0
Date Analyzed	12.07.93	12.07.93	12.07.93	12.07.93	12.07.93
Suspended Solids (160.2)					
Suspended Solids (160.2), mg/l	5.5	<5.0	75	190	<5.0
Date Analyzed	12.08.93	12.08.93	12.08.93	12.08.93	12.08.93
Total Dissolved Solids (160.1)					
Total Dissolved Solids, mg/l	63	40	56	49	41
Date Analyzed	12.09.93	12.09.93	12.09.93	12.09.93	12.09.93
Fecal Coliform (MT)					
Fecal Coliform MT, col/100mls	230	<2.0	1300	70	20
Date Analyzed	12.07.93	12.07.93	12.07.93	12.07.93	12.07.93

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LOG NO: S3-46908
Revised 1/12/94
Received: 07 DEC 93

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Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
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46908-7	RAFB-SL10-C-E1	12-04-93
46908-8	RAFB-SL11-C-E1	12-04-93
46908-9	RAFB-SL12-C-E1	12-04-93
46908-10	RAFB-SL13-C-E1	12-04-93

PARAMETER	46908-6	46908-7	46908-8	46908-9	46908-10
Phenolics, Total Recoverable (420.2)					
Phenolics,Total Recoverable, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Date Analyzed	12.20.93	12.20.93	12.31.93	12.31.93	12.31.93
Cadmium (200.7)					
Cadmium (200.7), mg/l	<0.0050	<0.0050	<0.0050	0.074	<0.0050
Date Analyzed	12.28.93	12.28.93	12.28.93	12.28.93	12.28.93
Chromium (200.7)					
Chromium (200.7), mg/l	<0.010	<0.010	<0.010	0.054	<0.010
Date Analyzed	12.28.93	12.28.93	12.28.93	12.28.93	12.28.93
Copper (200.7)					
Copper (200.7), mg/l	<0.020	<0.020	<0.020	0.065	<0.020
Date Analyzed	12.28.93	12.28.93	12.28.93	12.28.93	12.28.93
Nickel (200.7)					
Nickel (200.7), mg/l	<0.020	<0.020	<0.020	<0.020	<0.020
Date Analyzed	12.28.93	12.28.93	12.28.93	12.28.93	12.28.93
Silver (200.7)					
Silver (200.7), mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Date Analyzed	12.28.93	12.28.93	12.28.93	12.28.93	12.28.93
Zinc (200.7)					
Zinc (200.7), mg/l	<0.020	0.021	0.034	0.27	<0.020
Date Analyzed	12.28.93	12.28.93	12.28.93	12.28.93	12.28.93

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S3-46908

Received: 07 DEC 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46908-6	RAFB-SL9-C-E1	12-04-93
46908-7	RAFB-SL10-C-E1	12-04-93
46908-8	RAFB-SL11-C-E1	12-04-93
46908-9	RAFB-SL12-C-E1	12-04-93
46908-10	RAFB-SL13-C-E1	12-04-93

PARAMETER	46908-6	46908-7	46908-8	46908-9	46908-10
Lead (239.2)					
Lead (239.2), mg/l	<0.0050	<0.0050	0.0057	0.099	<0.0050
Date Analyzed	12.28.93	12.28.93	12.28.93	12.28.93	12.28.93
Total Kjeldahl Nitrogen (351.2)					
Total Kjeldahl Nitrogen-N, mg/l	0.84	0.65	0.65	1.1	0.71
Date Analyzed	12.30.93	12.30.93	12.30.93	12.30.93	12.30.93
Ammonia-N (350.1)					
Ammonia-N, mg/l	0.12	0.15	0.26	0.13	0.084
Date Analyzed	12.22.93	12.22.93	12.22.93	12.22.93	12.22.93
Nitrate + Nitrite-N (353.2)					
Nitrate + Nitrite-N, mg/l	0.41	0.063	0.078	0.28	0.056
Date Analyzed	12.21.93	12.21.93	12.21.93	12.21.93	12.21.93
Nitrogen (Organic) (351.2/350.1)					
Nitrogen(Organic) (351.2/350.1), mg/l	0.72	0.50	0.39	0.97	0.63
Date Analyzed	12.30.93	12.30.93	12.30.93	12.30.93	12.30.93
Total Phosphorous (365.4)					
Total Phosphorus (365.4), mg/l	<0.10	<0.10	0.15	0.16	<0.10
Date Analyzed	12.30.93	12.30.93	12.30.93	12.30.93	12.30.93

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SL ***SAVANNAH LABORATORIES***
& ENVIRONMENTAL SERVICES, INC.

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REPORT OF RESULTS

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46908-8	RAFB-SL11-C-E1	12-04-93
46908-9	RAFB-SL12-C-E1	12-04-93
46908-10	RAFB-SL13-C-E1	12-04-93

PARAMETER	46908-6	46908-7	46908-8	46908-9	46908-10
BN-A Extractables (625)					
Acenaphthene, ug/l	<10	<10	<10	<10	<10
Acenaphthylene, ug/l	<10	<10	<10	<10	<10
Anthracene, ug/l	<10	<10	<10	<10	<10
Benzo(a)Anthracene, ug/l	<10	<10	<10	<10	<10
Benzo(b)fluoranthene, ug/l	<10	<10	<10	<10	<10
Benzo(k)fluoranthene, ug/l	<10	<10	<10	<10	<10
Benzo(a)pyrene, ug/l	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene, ug/l	<10	<10	<10	<10	<10
Benzyl butyl phthalate, ug/l	<10	<10	<10	<10	<10
bis(2-Chloroethyl)ether, ug/l	<10	<10	<10	<10	<10
bis(2-Chloroethoxy)methane, ug/l	<10	<10	<10	<10	<10
bis(2-Ethylhexyl)phthalate, ug/l	<10	<10	<10	<10	<10
Bis(2-chloroisopropyl)ether, ug/l	<10	<10	<10	<10	<10
4-Bromophenyl-phenyl-ether, ug/l	<10	<10	<10	<10	<10
2-Chloronaphthalene, ug/l	<10	<10	<10	<10	<10
4-Chlorophenyl-phenyl ether, ug/l	<10	<10	<10	<10	<10
Chrysene, ug/l	<10	<10	<10	<10	<10
Dibenz(a,h)anthracene, ug/l	<10	<10	<10	<10	<10
Di-n-butylphthalate, ug/l	<10	<10	<10	<10	<10

RECD JAN 11 199

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46908-6	RAFB-SL9-C-E1	12-04-93
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46908-8	RAFB-SL11-C-E1	12-04-93
46908-9	RAFB-SL12-C-E1	12-04-93
46908-10	RAFB-SL13-C-E1	12-04-93

PARAMETER	46908-6	46908-7	46908-8	46908-9	46908-10
1,3-Dichlorobenzene, ug/l	<10	<10	<10	<10	<10
1,2-Dichlorobenzene, ug/l	<10	<10	<10	<10	<10
1,4-Dichlorobenzene, ug/l	<10	<10	<10	<10	<10
3,3'-Dichlorobenzidine, ug/l	<20	<20	<20	<20	<20
Diethylphthalate, ug/l	<10	<10	<10	<10	<10
Dimethylphthalate, ug/l	<10	<10	<10	<10	<10
2,4-Dinitrotoluene, ug/l	<20	<20	<20	<20	<20
2,6-Dinitrotoluene, ug/l	<20	<20	<20	<20	<20
Di-n-octylphthalate, ug/l	<10	<10	<10	<10	<10
Fluoranthene, ug/l	<10	<10	<10	<10	<10
Fluorene, ug/l	<10	<10	<10	<10	<10
Hexachlorobenzene, ug/l	<10	<10	<10	<10	<10
Hexachlorobutadiene, ug/l	<10	<10	<10	<10	<10
Hexachloroethane, ug/l	<2.0	<2.0	<2.0	<2.0	<2.0
Indeno(1,2,3-cd)pyrene, ug/l	<10	<10	<10	<10	<10
Isophorone, ug/l	<10	<10	<10	<10	<10
Naphthalene, ug/l	<10	<10	<10	<10	<10
Nitrobenzene, ug/l	<10	<10	<10	<10	<10
N-Nitrosodi-N-Propylamine, ug/l	<10	<10	<10	<10	<10
Phenanthrene, ug/l	<10	<10	<10	<10	<10

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LOG NO: S3-46908
Rev-3 1/24/94
Received: 07 DEC 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46908-6	RAFB-SL9-C-E1	12-04-93
46908-7	RAFB-SL10-C-E1	12-04-93
46908-8	RAFB-SL11-C-E1	12-04-93
46908-9	RAFB-SL12-C-E1	12-04-93
46908-10	RAFB-SL13-C-E1	12-04-93

PARAMETER	46908-6	46908-7	46908-8	46908-9	46908-10
Pyrene, ug/l	<10	<10	<10	<10	<10
1,2,4-Trichlorobenzene, ug/l	<10	<10	<10	<10	<10
4-Chloro-3-methylphenol, ug/l	<10	<10	<10	<10	<10
2-Chlorophenol, ug/l	<10	<10	<10	<10	<10
2,4-Dichlorophenol, ug/l	<10	<10	<10	<10	<10
2,4-Dimethylphenol, ug/l	<10	<10	<10	<10	<10
2,4-Dinitrophenol, ug/l	<50	<50	<50	<50	<50
2-Methyl-4,6-dinitrophenol, ug/l	<50	<50	<50	<50	<50
2-Nitrophenol, ug/l	<10	<10	<10	<10	<10
4-Nitrophenol, ug/l	<50	<50	<50	<50	<50
Pentachlorophenol, ug/l	<20	<20	<20	<20	<20
Phenol, ug/l	<10	<10	<10	<10	<10
2,4,6-Trichlorophenol, ug/l	<10	<10	<10	<10	<10
Benzidine, ug/l	<80	<80	<80	<80	<80
Surrogate-PHL	71 %	69 %	88 %	86 %	92 %
Surrogate-2FP	60 %	57 %	72 %	70 %	75 %
Surrogate-TBP	73 %	75 %	94 %	86 %	104 %
Surrogate-NBZ	68 %	68 %	90 %	83 %	95 %
Surrogate-2FBP	72 %	70 %	85 %	78 %	87 %
Surrogate-TPH	50 %	63 %	61 %	49 %	69 %
Date Extracted	12.10.93	12.10.93	12.10.93	12.10.93	12.10.93
Date Analyzed	12.16.93	12.16.93	12.17.93	12.17.93	12.17.93

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REPORT OF RESULTS

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46908-7	RAFB-SL10-C-E1	12-04-93
46908-8	RAFB-SL11-C-E1	12-04-93
46908-9	RAFB-SL12-C-E1	12-04-93
46908-10	RAFB-SL13-C-E1	12-04-93

PARAMETER	46908-6	46908-7	46908-8	46908-9	46908-10
Polynuclear Aromatics (610)					
Acenaphthene, ug/l	<10	<10	<10	<10	<10
Acenaphthylene, ug/l	<10	<10	<10	<10	<10
Benzo(a)pyrene, ug/l	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene, ug/l	<10	<10	<10	<10	<10
Benzo(b,k)fluoranthene, ug/l	<10	<10	<10	<10	<10
Chrysene + Benzo(a)anthracene, ug/l	<10	<10	<10	<10	<10
Fluoranthene, ug/l	<10	<10	<10	<10	<10
Fluorene, ug/l	<10	<10	<10	<10	<10
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l	<10	<10	<10	<10	<10
Naphthalene, ug/l	<10	<10	<10	<10	<10
Phenanthrene + Anthracene, ug/l	<10	<10	<10	<10	<10
Pyrene, ug/l	<10	<10	<10	<10	<10
1-Methylnaphthalene, ug/l	<10	<10	<10	<10	<10
2-Methylnaphthalene, ug/l	<10	<10	<10	<10	<10
Surrogate - 2-Fluorobiphenyl	28.1	19.4	23.2	26.2	21.3
Surrogate - Expected Value, mg/l	50	50	50	50	50
Surrogate - % Actual Recovery	56 %	39 %	46 %	52 %	43 %
Surrogate - Control Limit	27-123 %	27-123 %	27-123 %	27-123 %	27-123 %
Date Extracted	12.09.93	12.09.93	12.09.93	12.09.93	12.09.93
Date Analyzed	12.16.93	12.16.93	12.16.93	12.16.93	12.16.93

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46908-7	RAFB-SL10-C-E1	12-04-93
46908-8	RAFB-SL11-C-E1	12-04-93
46908-9	RAFB-SL12-C-E1	12-04-93
46908-10	RAFB-SL13-C-E1	12-04-93

PARAMETER	46908-6	46908-7	46908-8	46908-9	46908-10
Cl-Pesticides/PCB (608)					
Aldrin, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
alpha-BHC, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
beta-BHC, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
gamma-BHC, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
delta-BHC, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
Chlordane, ug/l	<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDD, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
4,4'-DDE, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
4,4'-DDT, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
Dieldrin, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
Endosulfan I, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
Endosulfan II, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
Endosulfan sulfate, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
Endrin, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
Endrin Aldehyde, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
Heptachlor, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
Heptachlor epoxide, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
Methoxychlor, ug/l	<0.50	<0.50	<0.50	<0.50	<0.50
Toxaphene, ug/l	<2.0	<2.0	<2.0	<2.0	<2.0

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REPORT OF RESULTS

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46908-6	RAFB-SL9-C-E1	12-04-93
46908-7	RAFB-SL10-C-E1	12-04-93
46908-8	RAFB-SL11-C-E1	12-04-93
46908-9	RAFB-SL12-C-E1	12-04-93
46908-10	RAFB-SL13-C-E1	12-04-93

PARAMETER	46908-6	46908-7	46908-8	46908-9	46908-10
Aroclor-1016, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Aroclor-1221, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Aroclor-1232, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Aroclor-1242, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Aroclor-1248, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Aroclor-1254, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Aroclor-1260, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Surrogate - Dibutylchlorendate % Rec	36 %	56 %	48 %	38 %	84 %
Date Extracted	12.09.93	12.09.93	12.09.93	12.09.93	12.09.93
Date Analyzed	01.05.94	01.05.94	01.05.94	01.05.94	01.05.94

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46908-11	RAFB-TB2	12-04-93

PARAMETER	46908-11				
Purgeables (624)					
Benzene, ug/l	<1.0				
Bromodichloromethane, ug/l	<1.0				
Bromoform, ug/l	<1.0				
Bromomethane, ug/l	<1.0				
Carbon Tetrachloride, ug/l	<1.0				
Chlorobenzene, ug/l	<1.0				
Chloroethane, ug/l	<1.0				
2-Chloroethylvinyl Ether, ug/l	<10				
Chloroform, ug/l	<1.0				
Chloromethane, ug/l	<1.0				
Dibromochloromethane, ug/l	<1.0				
1,2-Dichlorobenzene, ug/l	<1.0				
1,3-Dichlorobenzene, ug/l	<1.0				
1,4-Dichlorobenzene, ug/l	<1.0				
1,1-Dichloroethane, ug/l	<1.0				
1,2-Dichloroethane, ug/l	<1.0				
1,1-Dichloroethene, ug/l	<1.0				
Trans-1,2-Dichloroethene, ug/l	<1.0				
Cis-1,2-Dichloroethene, ug/l	<1.0				
1,2-Dichloropropane, ug/l	<1.0				
Cis-1,3-Dichloropropene, ug/l	<1.0				
Trans-1,3-Dichloropropene, ug/l	<1.0				
Ethylbenzene, ug/l	<1.0				

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46908-11	RAFB-TB2	12-04-93

PARAMETER	46908-11
Methylene Chloride (Dichloromethane), ug/l	<1.0
1,1,2,2-Tetrachloroethane, ug/l	<1.0
Tetrachloroethene, ug/l	<1.0
Toluene, ug/l	<1.0
1,1,1-Trichloroethane, ug/l	<1.0
1,1,2-Trichloroethane, ug/l	<1.0
Trichloroethylene, ug/l	<1.0
Trichlorofluoromethane, ug/l	<1.0
Vinyl Chloride, ug/l	<1.0
Xylenes, ug/l	<1.0
Acrolein, ug/l	<50
Acrylonitrile, ug/l	<50
Surrogate - Toluene-d8	99 %
Surrogate - 4-Bromofluorobenzene	97 %
Surrogate - 1,2-Dichloroethane-d4	95 %
Date Analyzed	12.18.93

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Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-12	Method Blank
46908-13	LCS/LCS Duplicate % Recovery
46908-14	LCS % RPD

PARAMETER	46908-12	46908-13	46908-14
Purgeables (624)			
Benzene, ug/l	<1.0	107/108 %	0.93 %
Bromodichloromethane, ug/l	<1.0	---	---
Bromoform, ug/l	<1.0	---	---
Bromomethane, ug/l	<1.0	---	---
Carbon Tetrachloride, ug/l	<1.0	---	---
Chlorobenzene, ug/l	<1.0	89/98 %	9.6 %
Chloroethane, ug/l	<1.0	---	---
2-Chloroethylvinyl Ether, ug/l	<10	---	---
Chloroform, ug/l	<1.0	---	---
Chloromethane, ug/l	<1.0	---	---
Dibromochloromethane, ug/l	<1.0	---	---
1,2-Dichlorobenzene, ug/l	<1.0	---	---
1,3-Dichlorobenzene, ug/l	<1.0	---	---
1,4-Dichlorobenzene, ug/l	<1.0	---	---
1,1-Dichloroethane, ug/l	<1.0	---	---
1,2-Dichloroethane, ug/l	<1.0	---	---
1,1-Dichloroethene, ug/l	<1.0	76/89 %	16 %
Trans-1,2-Dichloroethene, ug/l	<1.0	---	---
Cis-1,2-Dichloroethene, ug/l	<1.0	---	---
1,2-Dichloropropane, ug/l	<1.0	---	---
Cis-1,3-Dichloropropene, ug/l	<1.0	---	---

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Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-12	Method Blank
46908-13	LCS/LCS Duplicate % Recovery
46908-14	LCS % RPD

PARAMETER	46908-12	46908-13	46908-14
Trans-1,3-Dichloropropene, ug/l	<1.0	---	---
Ethylbenzene, ug/l	<1.0	---	---
Methylene Chloride (Dichloromethane), ug/l	<1.0	---	---
1,1,2,2-Tetrachloroethane, ug/l	<1.0	---	---
Tetrachloroethene, ug/l	<1.0	---	---
Toluene, ug/l	<1.0	95/101 %	6.1 %
1,1,1-Trichloroethane, ug/l	<1.0	---	---
1,1,2-Trichloroethane, ug/l	<1.0	---	---
Trichloroethylene, ug/l	<1.0	95/96 %	1.0 %
Trichlorofluoromethane, ug/l	<1.0	---	---
Vinyl Chloride, ug/l	<1.0	---	---
Xylenes, ug/l	<1.0	---	---
Acrolein, ug/l	<50	---	---
Acrylonitrile, ug/l	<50	---	---
Surrogate - Toluene-d8	100 %	94/101 %	---
Surrogate - 4-Bromofluorobenzene	91 %	98/98 %	---
Surrogate - 1,2-Dichloroethane-d4	95 %	104/105 %	---
Date Analyzed	12.18.93	---	---
Cyanide (335.3)			
Cyanide (335.3), mg/l	<0.010	96/96 %	0 %
Date Analyzed	12.15.93	---	---
pH (150.1)			
pH, units	---	98/98 %	0 %

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-12	Method Blank
46908-13	LCS/LCS Duplicate % Recovery
46908-14	LCS % RPD

PARAMETER	46908-12	46908-13	46908-14
Oil & Grease			
Oil & Grease (413.2), mg/l	<1.0	89/87 %	2.3 %
Date Analyzed	12.22.93	---	---
Chemical Oxygen Demand (410.2)			
Chemical Oxygen Demand, mg/l	<20	93/95 %	2.1 %
Date Analyzed	12.08.93	---	---
Fluoride (340.2)			
Fluoride, mg/l	<0.20	110/106 %	3.7 %
Date Analyzed	12.16.93	---	---
Fecal Coliform (MT)			
Fecal Coliform MT, col/100mls	<2.0	---	---
Date Analyzed	12.07.93	---	---
Phenolics, Total Recoverable (420.2)			
Phenolics,Total Recoverable, mg/l	<0.010	90/91 %	1.1 %
Date Analyzed	12.20.93	---	---
Cadmium (200.7)			
Cadmium (200.7), mg/l	<0.0050	90/91 %	1.1 %
Date Analyzed	12.28.93	---	---
Chromium (200.7)			
Chromium (200.7), mg/l	<0.010	96/97 %	1.0 %
Date Analyzed	12.28.93	---	---
Copper (200.7)			
Copper (200.7), mg/l	<0.020	97/98 %	1.0 %
Date Analyzed	12.28.93	---	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-12	Method Blank
46908-13	LCS/LCS Duplicate % Recovery
46908-14	LCS % RPD

PARAMETER	46908-12	46908-13	46908-14
Nickel (200.7)			
Nickel (200.7), mg/l	<0.020	96/97 %	1.0 %
Date Analyzed	12.28.93	---	---
Silver (200.7)			
Silver (200.7), mg/l	<0.010	94/96 %	2.1 %
Date Analyzed	12.28.93	---	---
Zinc (200.7)			
Zinc (200.7), mg/l	<0.020	92/94 %	2.2 %
Date Analyzed	12.28.93	---	---
Lead (239.2)			
Lead (239.2), mg/l	<0.0050	104/106 %	1.9 %
Date Analyzed	12.28.93	---	---
Biochemical Oxygen Demand (5-Day) (405.1)			
Biochemical Oxygen Demand (5 Day), mg/l	<2.0	104/109 %	4.7 %
Date Analyzed	12.07.93	---	---
Suspended Solids (160.2)			
Suspended Solids (160.2), mg/l	<5.0	94/100 %	6.2 %
Date Analyzed	12.08.93	---	---
Total Dissolved Solids (160.1)			
Total Dissolved Solids, mg/l	<5.0	97/106 %	8.9 %
Date Analyzed	12.09.93	---	---
Nitrate + Nitrite-N (353.2)			
Nitrate + Nitrite-N, mg/l	<0.050	99/99 %	0 %
Date Analyzed	12.21.93	---	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-12	Method Blank
46908-13	LCS/LCS Duplicate % Recovery
46908-14	LCS % RPD

PARAMETER	46908-12	46908-13	46908-14
Total Phosphorous (365.4)			
Total Phosphorus (365.4), mg/l	<0.10	97/96 %	1.0 %
Date Analyzed	12.30.93	---	---
Total Kjeldahl Nitrogen (351.2)			
Total Kjeldahl Nitrogen-N, mg/l	<0.10	109/87 %	22 %
Date Analyzed	12.30.93	---	---
Ammonia-N (350.1)			
Ammonia-N, mg/l	<0.030	91/94 %	3.2 %
Date Analyzed	12.22.93	---	---
Nitrogen (Organic) (351.2/350.1)			
Nitrogen(Organic) (351.2/350.1), mg/l	<0.070	---	---
Date Analyzed	12.30.93	---	---

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46908-12	Method Blank
46908-13	LCS/LCS Duplicate % Recovery
46908-14	LCS % RPD

PARAMETER	46908-12	46908-13	46908-14
BN-A Extractables (625)			
Acenaphthene, ug/l	<10	71/72 %	1.4 %
Acenaphthylene, ug/l	<10	---	---
Anthracene, ug/l	<10	---	---
Benzo(a)Anthracene, ug/l	<10	---	---
Benzo(b)fluoranthene, ug/l	<10	---	---
Benzo(k)fluoranthene, ug/l	<10	---	---
Benzo(a)pyrene, ug/l	<10	---	---
Benzo(g,h,i)perylene, ug/l	<10	---	---
Benzyl butyl phthalate, ug/l	<10	---	---
bis(2-Chloroethyl)ether, ug/l	<10	---	---
bis(2-Chloroethoxy)methane, ug/l	<10	---	---
bis(2-Ethylhexyl)phthalate, ug/l	<10	---	---
Bis(2-chloroisopropyl)ether, ug/l	<10	---	---
4-Bromophenyl-phenyl-ether, ug/l	<10	---	---
2-Chloronaphthalene, ug/l	<10	---	---
4-Chlorophenyl-phenyl ether, ug/l	<10	---	---
Chrysene, ug/l	<10	---	---
Dibenz(a,h)anthracene, ug/l	<10	---	---
Di-n-butylphthalate, ug/l	<10	---	---
1,3-Dichlorobenzene, ug/l	<10	---	---
1,2-Dichlorobenzene, ug/l	<10	---	---

RECD JAN 11 9

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S3-46908

Received: 07 DEC 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-12	Method Blank
46908-13	LCS/LCS Duplicate % Recovery
46908-14	LCS % RPD

PARAMETER	46908-12	46908-13	46908-14
1,4-Dichlorobenzene, ug/l	<10	67/66 %	1.5 %
3,3'-Dichlorobenzidine, ug/l	<20	---	---
Diethylphthalate, ug/l	<10	---	---
Dimethylphthalate, ug/l	<10	---	---
2,4-Dinitrotoluene, ug/l	<20	74/75 %	1.3 %
2,6-Dinitrotoluene, ug/l	<20	---	---
Di-n-octylphthalate, ug/l	<10	---	---
Fluoranthene, ug/l	<10	---	---
Fluorene, ug/l	<10	---	---
Hexachlorobenzene, ug/l	<10	---	---
Hexachlorobutadiene, ug/l	<10	---	---
Hexachloroethane, ug/l	<2.0	---	---
Indeno(1,2,3-cd)pyrene, ug/l	<10	---	---
Isophorone, ug/l	<10	---	---
Naphthalene, ug/l	<10	---	---
Nitrobenzene, ug/l	<10	---	---
N-Nitrosodi-N-Propylamine, ug/l	<10	87/87 %	0 %
Phenanthrene, ug/l	<10	---	---
Pyrene, ug/l	<10	69/69 %	0 %
1,2,4-Trichlorobenzene, ug/l	<10	72/71 %	1.4 %
4-Chloro-3-methylphenol, ug/l	<10	70/71 %	1.4 %
2-Chlorophenol, ug/l	<10	68/68 %	0 %

RECD JAN 1[illegible]

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& ENVIRONMENTAL SERVICES, INC.

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LOG NO: S3-46908
Rev-3 1/24/94
Received: 07 DEC 93

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Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-12	Method Blank
46908-13	LCS/LCS Duplicate % Recovery
46908-14	LCS % RPD

PARAMETER	46908-12	46908-13	46908-14
2,4-Dichlorophenol, ug/l	<10	---	---
2,4-Dimethylphenol, ug/l	<10	---	---
2,4-Dinitrophenol, ug/l	<50	---	---
2-Methyl-4,6-dinitrophenol, ug/l	<50	---	---
2-Nitrophenol, ug/l	<10	---	---
4-Nitrophenol, ug/l	<50	43/43 %	0 %
Pentachlorophenol, ug/l	<20	53/50 %	5.8 %
Phenol, ug/l	<10	73/72 %	1.4 %
2,4,6-Trichlorophenol, ug/l	<10	---	---
Benzidine, ug/l	<80	---	---
Surrogate-PHL	74 %	75/77 %	---
Surrogate-2FP	61 %	63/63 %	---
Surrogate-TBP	70 %	80/79 %	---
Surrogate-NBZ	70 %	71/75 %	---
Surrogate-2FBP	73 %	73/74 %	---
Surrogate-TPH	84 %	81/82 %	---
Date Extracted	12.10.93	---	---
Date Analyzed	12.16.93	---	---

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by J. Schendel

SL ***SAVANNAH LABORATORIES***
& ENVIRONMENTAL SERVICES, INC.

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LOG NO: S3-46908

Received: 07 DEC 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-12	Method Blank
46908-13	LCS/LCS Duplicate % Recovery
46908-14	LCS % RPD

PARAMETER	46908-12	46908-13	46908-14
Polynuclear Aromatics (610)			
Acenaphthene, ug/l	<10	68/59 %	14 %
Acenaphthylene, ug/l	<10	---	---
Benzo(a)pyrene, ug/l	<10	44/53 %	19 %
Benzo(g,h,i)perylene, ug/l	<10	---	---
Benzo(b,k)fluoranthene, ug/l	<10	---	---
Chrysene + Benzo(a)anthracene, ug/l	<10	---	---
Fluoranthene, ug/l	<10	---	---
Fluorene, ug/l	<10	69/75 %	8.3 %
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l	<10	---	---
Naphthalene, ug/l	<10	74/60 %	21 %
Phenanthrene + Anthracene, ug/l	<10	---	---
Pyrene, ug/l	<10	74/87 %	16 %
1-Methylnaphthalene, ug/l	<10	---	---
2-Methylnaphthalene, ug/l	<10	---	---
Surrogate - 2-Fluorobiphenyl	35.3	34.4/28.8	---
Surrogate - Expected Value, mg/l	50	50	---
Surrogate - % Actual Recovery	71 %	69/58 %	---
Surrogate - Control Limit	27-123 %	---	---
Date Extracted	12.09.93	---	---
Date Analyzed	12.16.93	---	---

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LOG NO: S3-46908

Received: 07 DEC 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-12	Method Blank
46908-13	LCS/LCS Duplicate % Recovery
46908-14	LCS % RPD

PARAMETER	46908-12	46908-13	46908-14
Cl-Pesticides/PCB (608)			
Aldrin, ug/l	<0.050	85/100 %	16 %
alpha-BHC, ug/l	<0.050	---	---
beta-BHC, ug/l	<0.050	---	---
gamma-BHC, ug/l	<0.050	85/100 %	16 %
delta-BHC, ug/l	<0.050	---	---
Chlordane, ug/l	<0.50	---	---
4,4'-DDD, ug/l	<0.10	---	---
4,4'-DDE, ug/l	<0.10	---	---
4,4'-DDT, ug/l	<0.10	114/134 %	16 %
Dieldrin, ug/l	<0.10	100/108 %	7.7 %
Endosulfan I, ug/l	<0.050	---	---
Endosulfan II, ug/l	<0.10	---	---
Endosulfan sulfate, ug/l	<0.10	---	---
Endrin, ug/l	<0.10	104/94 %	10 %
Endrin Aldehyde, ug/l	<0.10	---	---
Heptachlor, ug/l	<0.050	80/95 %	17 %
Heptachlor epoxide, ug/l	<0.050	---	---
Methoxychlor, ug/l	<0.50	---	---
Toxaphene, ug/l	<2.0	---	---
Aroclor-1016, ug/l	<1.0	---	---
Aroclor-1221, ug/l	<1.0	---	---

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LOG NO: S3-46908

Received: 07 DEC 93

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57 Executive Park South, Suite 500
Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-12	Method Blank
46908-13	LCS/LCS Duplicate % Recovery
46908-14	LCS % RPD

PARAMETER	46908-12	46908-13	46908-14
Aroclor-1232, ug/l	<1.0	---	---
Aroclor-1242, ug/l	<1.0	---	---
Aroclor-1248, ug/l	<1.0	---	---
Aroclor-1254, ug/l	<1.0	---	---
Aroclor-1260, ug/l	<1.0	---	---
Surrogate - Dibutylchlorendate % Rec	120 %	100/116 %	---
Date Extracted	12.09.93	---	---
Date Analyzed	01.05.94	---	---

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Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-15	MS/MSD % Recovery (RAFB-SL10-G-E1)
46908-16	MS/MSD % RPD

PARAMETER	46908-15	46908-16
Purgeables (624)		
Benzene	141/126 %	11 %
Chlorobenzene	119/108 %	9.7 %
1,1-Dichloroethene	124/110 %	12 %
Toluene	146/134 %	8.6 %
Trichloroethylene	123/109 %	12 %
Surrogate - Toluene-d8	94/95 %	---
Surrogate - 4-Bromofluorobenzene	97/94 %	---
Surrogate - 1,2-Dichloroethane-d4	94/94 %	---
Cyanide (335.3)		
Cyanide (335.3)	81/81 %	0 %
Oil & Grease		
Oil & Grease (413.2)	79/84 %	6.1 %

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Mr. John Schendel
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Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

46908-17 MS/MSD % Recovery (RAFB-SL10-C-E1)
46908-18 MS/MSD % RPD

PARAMETER	46908-17	46908-18
Chemical Oxygen Demand (410.2)		
Chemical Oxygen Demand	---	---
Fluoride (340.2)		
Fluoride	113/117 %	3.5 %
Fecal Coliform (MT)		
Fecal Coliform MT	---	---
Phenolics, Total Recoverable (420.2)		
Phenolics,Total Recoverable	94/100 %	6.2 %
Cadmium (200.7)		
Cadmium (200.7)	87/87 %	0 %
Chromium (200.7)		
Chromium (200.7)	97/99 %	2.0 %
Copper (200.7)		
Copper (200.7)	97/98 %	1.0 %
Nickel (200.7)		
Nickel (200.7)	96/96 %	0 %
Silver (200.7)		
Silver (200.7)	97/99 %	2.0 %
Zinc (200.7)		
Zinc (200.7)	90/90 %	0 %
Lead (239.2)		
Lead (239.2)	106/105 %	0.94 %
Nitrate + Nitrite-N (353.2)		
Nitrate + Nitrite-N	76/79 %	3.9 %

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LOG NO: S3-46908
Revised 1/12/94
Received: 07 DEC 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-17	MS/MSD % Recovery (RAFB-SL10-C-E1)
46908-18	MS/MSD % RPD

PARAMETER	46908-17	46908-18
Total Phosphorous (365.4)		
Total Phosphorus (365.4)	65/32 %	68 %
Total Kjeldahl Nitrogen (351.2)		
Total Kjeldahl Nitrogen-N	73/98 %	29 %
Ammonia-N (350.1)		
Ammonia-N	48/52 %	8.0 %
Nitrogen (Organic) (351.2/350.1)		
Nitrogen(Organic) (351.2/350.1)	---	---

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LOG NO: S3-46908
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Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

46908-17 MS/MSD % Recovery (RAFB-SL10-C-E1)
46908-18 MS/MSD % RPD

PARAMETER	46908-17	46908-18
BN-A Extractables (625)		
Acenaphthene	71/70 %	1.4 %
1,4-Dichlorobenzene	66/67 %	1.5 %
2,4-Dinitrotoluene	75/74 %	1.3 %
N-Nitrosodi-N-Propylamine	81/85 %	4.8 %
Pyrene	70/70 %	0 %
1,2,4-Trichlorobenzene	70/72 %	2.8 %
4-Chloro-3-methylphenol	70/72 %	2.8 %
2-Chlorophenol	66/66 %	0 %
4-Nitrophenol	47/46 %	2.2 %
Pentachlorophenol	60/59 %	1.7 %
Phenol	70/71 %	1.4 %
Surrogate-PHL	74/74 %	---
Surrogate-2FP	61/62 %	---
Surrogate-TBP	75/79 %	---
Surrogate-NBZ	71/73 %	---
Surrogate-2FBP	74/72 %	---
Surrogate-TPH	73/72 %	---
Polynuclear Aromatics (610)		
Acenaphthene	60/63 %	4.9 %
Benzo(a)pyrene	38/26 %	38 %
Fluorene	63/65 %	3.1 %
Naphthalene	64/69 %	7.5 %
Pyrene	86/67 %	25 %

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LOG NO: S3-46908
Rev-2 1/17/94
Received: 07 DEC 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-17	MS/MSD % Recovery (RAFB-SL10-C-E1)
46908-18	MS/MSD % RPD

PARAMETER	46908-17	46908-18
Cl-Pesticides/PCB (608)		
Aldrin	80/90 %	12 %
gamma-BHC	85/90 %	5.7 %
4,4'-DDT	102/106 %	3.8 %
Dieldrin	100/118 %	16 %
Endrin	92/120 %	26 %
Heptachlor	80/85 %	6.1 %

RECD JAN 20 1994
-by J. Schendel

SL ***SAVANNAH LABORATORIES***
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LOG NO: S3-46908
Rev-3 1/24/94
Received: 07 DEC 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-19	Method Blank
46908-20	LCS/LCS Duplicate % Recovery
46908-21	LCS % RPD

PARAMETER	46908-19	46908-20	46908-21
Phenolics, Total Recoverable			
Phenolics,Total Recoverable, mg/l	<0.010	104/112 %	7.4 %
Date Analyzed	12.31.93	---	---

Methods: EPA SW-846 and 40 CFR Part 136.
Total Recoverable Phenolics analyzed by
Method 420.2.

Linda A. Wolfe
Linda A. Wolfe

Final Page Of Report

RECD JAN 24 1994
by J. Schendel

TEMPERATURE RECORD

Project Reference:	SL Log No.:	Date Received:
Robbins AFB	53 46908	12-7-93

Chain of Custody Number	Cooler Temperature
1320	2.8
1318	0.9
1317	FWT 0.0
1226	1.0
1319	FWT 0.1
1225	0.7
1316	4.7

RECD JAN 11 1994

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

FCU\CU12:11.03.93:0

ENGINEERING-SCIENCE

CHAIN OF CUSTODY RECORD

1316

ES JOB NUMBER	PROJECT NAME\LOCATION	SHIP TO:
AA 002.03	RoBBins AFB	Sahvanah LaB GA

SAMPLER(S): (Signature) E [signature] for Jeffrey Albert / Allen Ballinger

PRESERVATIVE REQUIRED: 4C, H2SO4, NaOH, H2SO4, 4C, 4C, HNO3, Na Thio, H2SO4

ANALYSES REQUIRED: 150.1/310.2, 413.2/418.1, 335.3, 420.1, 608/610/625, 160.1/2/405.1, 200.7/239.2, SM5221.6, 300.3/351.3/353.2/365.4

Date	Time	Sample Description	Number of Containers	150.1/310.2	413.2/418.1	335.3	420.1	608/610/625	160.1/2/405.1	200.7/239.2	SM5221.6	300.3/351.3/353.2/365.4	Sample Type	Matrix	Remarks
12-4-93	2215 to 2215	RAFB-SL10-C-E1	22	X	X	X	X	X	X	X	X	X	G (C) EAS	H2O	ms/msD
													~~G C~~		
													G C		
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EAS

RECD JAN 11 1994

Relinquished by: (Signature)	Date/Time	Received for Laboratory by:	Date/Time	Remarks:
E [signature]	12-6-93 1800	J Baker [signature] 468908	12/7/93 10:08	12/8 per J. Schandel bottles for O+G, CN, TPH should be labeled RAFB-SL10-G-E1 BH
				Airbill#: 8446985245

Distribution: Original, yellow and pink sheets sent to lab. Gold retained by field personnel.
Lab retains original and sends yellow and pink copies with analytical report.

G - Grab
C - Composite

ENGINEERING-SCIENCE
CHAIN OF CUSTODY RECORD

ES JOB NUMBER: AA002.03

PROJECT NAME\LOCATION: ROBBins AFB

SAMPLER(S): (Signature) E[illegible] for Jeffrey Albert / Alan Bollinger

SHIP TO: Savannah Lab GA

PRESERVATIVE REQUIRED / ANALYSES REQUIRED

Date	Time	Sample Description	Number of Containers	4C 150.1/340.2	H2SO4 413.2/418.1	NaOH 335.3	H2SO4 420.1	4C benz/tol/[illegible]	4C 160.1/2 [illegible]	HNO3 200.7/239.2	[illegible] Sm4221-6 [illegible]	H2SO4 [illegible]	Sample Type	Matrix	Remarks
12-4-93	2115 TO 2215	RAFB-SL10-C-E1	15	X	X	X	X	X	X	X	X	X	G (C)	H2O	
													G C		
													G C		
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EAB

Relinquished by: (Signature)	Date/Time		Received for Laboratory by:	Date/Time		Remarks
E[illegible]	12-6 93	1800	J Baker 46908	12/7/93	10:08	Remarks: N/8 per J Solender[?] bottles for CN, 016-TPH showed need: RAFB-SL10-G-E1 [illegible]
						Airbill#: 8446985245

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Distribution: Original, yellow and pink sheets sent to lab. Gold retained by field personnel.
Lab retains original and sends yellow and pink copies with analytical report.

G - Grab
C - Composite

ENGINEERING-SCIENCE

CHAIN OF CUSTODY RECORD

1318

ES JOB NUMBER: AA002.03

PROJECT NAME\LOCATION: RoBBins AFB

SAMPLER(S): (Signature) E [signature] for Jeffrey Albert / Alan Balling [signature]

SHIP TO: Savannah Lab GA

Date	Time	Sample Description	Number of Containers	150.1/340.2 (4C)	413.2/410.1 (H_2SO_4)	335.3 (NaOH)	420.1 (H_2SO_4)	608/610/625 (4C)	160.1.2/405.1 (4C)	200.7/235.2 (HNO_3)	SM9221-6 (Na Thio)	350.3/351.2/365.4 (H_2SO_4)	Sample Type	Matrix	Remarks
12-4-93	2055 to 2140	RAFB-SL11-C-E1	15	X	X	X	X	X	X	X	X	X	G (C)	H2O	
													G C		
													G C		
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													G C		

RECD JAN 11 1994

Relinquished by: (Signature)	Date/Time		Received for Laboratory by:	Date/Time		Remarks
[signature]	12-6 93	1800	L Baker 46908	12/7/93	10:08	12/8 per J Sokendal bottles for CN, O&G pH should read: RAFB-SL11-G-E1 pH
						Airbill#: 8446985245

Distribution: Original, yellow and pink sheets sent to lab. Gold retained by field personnel. Lab retains original and sends yellow and pink copies with analytical report.

G - Grab

C - Composite

ENGINEERING-SCIENCE
CHAIN OF CUSTODY RECORD

ES JOB NUMBER: AA002.03

PROJECT NAME\LOCATION: RoBBins AFB

SAMPLER(S): (Signature) E T for Jeffrey Albert / Alan Ballinger

SHIP TO: Savannah Lab GA

				PRESERVATIVE REQUIRED: 4c	H2SO4	NaOH	H2SO4	4c	4c	HNO3	Sod Thio	H2SO4			
Date	**Time**	**Sample Description**	**Number of Containers**	ANALYSES REQUIRED: 150.1/340.2	413.2/418.1	335.3	420.1	608/610/625	160.1.2/160.3	200.7/239.2	Sm9221.6	300.3/351.2/365.4	**Sample Type**	**Matrix**	**Remarks**
12-4-93	2040 TO 2205	RAFB-SL12-C-E1	15	X	X	X	X	X	X	X	X	X	G (C)	H2O	
													G C		
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EGH

RECD JAN 11 1994

Relinquished by: (Signature)	Date/Time		Received for Laboratory by:	Date/Time		Remarks:
E T	12-6 93	1800	L. Baker 46908	12/7/93	10:58	Airbill#: 8446985245

Distribution: Original, yellow and pink sheets sent to lab. Gold retained by field personnel. Lab retains original and sends yellow and pink copies with analytical report.

G - Grab
C - Composite

ENGINEERING-SCIENCE
CHAIN OF CUSTODY RECORD

ES JOB NUMBER	PROJECT NAME\LOCATION	SHIP TO:
AA002.03	RoBBins AFB	Savannah LaB GA

SAMPLER(S): (Signature) E [signature] FOR JeFFRey ALBert / Alan Bollinger

Date	Time	Sample Description	Number of Containers	150.1/310.2 (4C)	413.2/410.1 (H2SO4)	335.3 (NaOH)	420.1 (H2SO4)	405/600/625 (4C)	160.1.2/[illegible] (4C)	200.7/239.2 (HNO3)	Sm 9221-6 (Thio)	353.2/351.2/365.[illegible] (H2SO4)	Sample Type	Matrix	Remarks
12-4-93	2045 TO 2200	RAFB-SL13-C-E1	15	Y	Y	Y	Y	Y	Y	Y	Y	X	G (C)	H2O	
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EAB

RECD JAN 11 1994

Relinquished by: (Signature)	Date/Time		Received for Laboratory by:	Date/Time		Remarks:
E [signature]	12-6 93	1800	L Baker 46908	12/7/93	10:18	12/8 per 2 scheduled bottles for an, oxy, pH showed read: RAFB-SL13-G-E1 [illegible]
						Airbill#: 8446485245

Distribution: Original, yellow and pink sheets sent to lab. Gold retained by field personnel.
Lab retains original and sends yellow and pink copies with analytical report.

G - Grab
C - Composite

ENGINEERING-SCIENCE
CHAIN OF CUSTODY RECORD

1225

ES JOB NUMBER	PROJECT NAME\LOCATION	SHIP TO:
AA002.03	ROBBins AFB	Salvannah Lab GA.

SAMPLER(S): (Signature) [signature] FOR Jeffrey Albert / Alan Ballinger

PRESERVATIVE REQUIRED / ANALYSES REQUIRED

Date	Time	Sample Description	Number of Containers	4C 150.1/340.2	H2SO4 413.2/410.1	NaOH 335.3	H2SO4 420.1	4C 608/610/624	4C 160.1.2/405.1	HNO3 200.7/239.2	Thio SM 9221-C	H2SO4 330.3 351.2 353.2 365.4	Sample Type	Matrix	Remarks
12-4-93	2050 TO 2210	RAFB-SL7-~~G~~-E1	15	X	X	X	X	X	X	X	X	X	G (C)	H2O	
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RECD JAN 11 1994

Relinquished by: (Signature)	Date/Time	Received for Laboratory by:	Date/Time	Remarks:
[signature]	12-6-93 1800	L Baker 46908	12/7/93 10:08	Airbill#: 8446985245

Distribution: Original, yellow and pink sheets sent to lab. Gold retained by field personnel.
Lab retains original and sends yellow and pink copies with analytical report.

G - Grab
C - Composite

ENGINEERING-SCIENCE

CHAIN OF CUSTODY RECORD

1226

ES JOB NUMBER	PROJECT NAME\LOCATION
AA002.03	Robbins AFB

SAMPLER(S): (Signature)

E. Tao for Jeffrey Albert / Alan Ballinger

PRESERVATIVE REQUIRED: HCL

ANALYSES REQUIRED: 624 601 602

SHIP TO: Southwest Lab GA

Date	Time	Sample Description	Number of Containers	624	601	602	Sample Type	Matrix	Remarks
12-4-93	2045	RAFB-SL9-G-E1	6	X			(G) C	H2O	
12-4-93	2055	RAFB-SL10-G-E1	18	X			(G) C	H2O	
12-4-93	2045	RAFB-SL11-G-E1	6	X			(G) C	H2O	
12-4-93	2030	RAFB-SL12-G-E1	6	X			(G) C	H2O	
12-4-93	2035	RAFB-SL13-G-E1	6	X			(G) C	H2O	
12-4-93		RAFB-TB2	6	X			(G) C	H2O	
							G C		
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RECD JAN 11 1994

EAS

Relinquished by: (Signature)	Date/Time	Received for Laboratory by:	Date/Time	Remarks:
E. Tao	12-6-93 1800	L Baker 46908	12/7/93 10:08	Airbill#: 8446985245

RECD JAN 11 1994

Distribution: Original, yellow and pink sheets sent to lab. Gold retained by field personnel. Lab retains original and sends yellow and pink copies with analytical report.

G - Grab
C - Composite

ATTACHMENT B
DATA VALIDATION REPORTS FOR THE ANALYTICAL DATA RESULTING FROM THE NOVEMBER-DECEMBER 1993 STORM WATER SAMPLING EFFORT ROBINS AFB, GEORGIA

DATA VALIDATION REPORTS FOR THE ANALYTICAL DATA RESULTING FROM THE NOVEMBER 5, 1993 RAIN EVENT

DATA VALIDATION OF

VOLATILE ORGANIC COMPOUNDS BY EPA 624

This report contains the validation of the following samples.

Sample ID	Type	Matrix
RAFB-SL1-G-E1	Grab	Water
RAFB-SL2-G-E1	Grab	Water
RAFB-SL3-G-E1	Grab	Water
RAFB-SL4-G-E1	Grab	Water
RAFB-SL5-G-E1	Grab	Water
RAFB-SL6-G-E1	Grab	Water
RAFB-SL7-G-E1	Grab	Water
RAFB-SL8-G-E1	Grab	Water
RAFB-SL16-G-E1	Grab	Water
RAFB-TB1-G-E1	Grab	Water

I. HOLDING TIMES

All samples were analyzed within the required 14 days of sampling.

2. BLANKS

There were two method blanks and one trip blank in association with these samples. All blanks were found to be free of all analyte contamination except:

Blank	Analyte	Conc.	Affected Samples
RAFB-TB1-G-E1	methylene chloride	1.0	RAFB-SL16-G-E1
	1,1,1-trichloroethane	4.0	None
	xylenes	3.1	None

Data validation criteria for method blanks and trip blanks are that all associated sample results with concentrations less than 10X the common lab contaminants (acetone, 2-butanone and methylene chloride) and less than 5X all other analytes found in the blanks were flagged "U" and are considered to be non-detect at the value given. The positive value of 1.0 µg/L for methyene chlorinde in sample RAFB-SL16-G-E1 was flagged as "U" at the value given due to the presence of the analyte in the trip balnk RAFB-TB1-G-E1. No other qualification was required as all results for these compounds were either reported as non-detect or were > 10X the blank value.

3. SPIKE/ SPIKE DUPLICATE (MS/MSD AND BS/BSD)

Sample RAFB-SL6-G-E1 was analyzed as the MS/MSD.

All %R and RPDs were compliant except:

Analyte	S %R	SD %R	QC Limit %R	RPD	QC Limit RPD
benzene	150	141	76-127	-	11
chlorobenzene	23	43	75-130	61	13
toluene	248	320	76-125	25	13
1,1-dichloroethene	-	-	61-145	-	14
trichloroethene	-	-	71-120	-	14

No flags were assigned based on these results as other QC criteria (surrogates) were within acceptance limits.

All BS(LCS) percent recoveries were within QC limits.

4. SURROGATE

There were three surrogates added to each sample. All surrogate %R were within the QC limits listed below:

Surrogate	%R QC Limit
1,2-dichloroethane-d4	76-114
toluene-d8	88-110
bromofluorobenzene	86-115

5. FIELD DUPLICATES

Sample RAFB-SL16-G-E1 was a coded field duplicate of sample RAFB-SL6-G-E1. The RPD QC limits for field duplicates are <20%. If the sample and/or the duplicate results are less than 5X the RL, the QC limit is ± 2X the RL. The following lists the non-compliant results of the coded duplicates.

Analyte	Result Sample	Result Duplicate	RPD	QC Limit
benzene	1.5	4.8	> 2X RL	2.0
chlorobenzene	8.7	ND	> 2X RL	2.0
ethylbenzene	ND	6.3	> 2X RL	2.0
toluene	1.2	19	> 2X RL	2.0

All positive results for these compounds in all samples were qualified as estimated "J".

6. PROJECT REPORTING LIMITS

All reporting limits were at or below the Georgia EPD NPDES required detection limits.

7. OVERALL ASSESSMENT OF DATA FOR THE CASE

The data quality objectives for measurement data include considerations for precision, accuracy, completeness, representativeness and comparability. The data package as presented by Savannah Laboratories is 100% complete and all data are valid as qualified.

DATA VALIDATION OF

SEMIVOLATILE ORGANIC COMPOUNDS (BNA) BY EPA 625

This report contains the validation of following samples.

Sample ID	Type	Matrix
RAFB-SL1-C-E1	Composite	Water
RAFB-SL2-C-E1	Composite	Water
RAFB-SL3-C-E1	Composite	Water
RAFB-SL4-C-E1	Composite	Water
RAFB-SL5-C-E1	Composite	Water
RAFB-SL6-C-E1	Composite	Water
RAFB-SL7-C-E1	Composite	Water
RAFB-SL8-C-E1	Composite	Water
RAFB-SL16-C-E1	Composite	Water

1. HOLDING TIMES

All samples were extracted within the required seven days of sample collection and analyzed within forty days of extraction.

2. BLANKS

There was one method blank in association with these samples. The blank was found to be free of all analyte contamination.

Data validation criteria for method blanks are that all associated sample results with concentrations less than 10X the common lab contaminants (phthalates) and less than 5X all other analytes found in the blanks were flagged "U" and are considered to be non-detect at the value given.

3. SPIKE/SPIKE DUPLICATE (MS/MSD AND BS/BSD)

Sample RAFB-SL6-C-E1 was analyzed as the MS/MSD.

All %R and RPDs were compliant except:

Analyte	S %R	SD %R	QC Limit %R	RPD	QC Limit RPD
2,4-dinitrotoluene	120	119	24-96	-	38
1,2,3-trichlorobenzene	-	-	39-98	-	28
acenaphthene	-	-	46-118	-	31
pyrene	-	-	26-127	-	31
N-nitroso-di-n-propylamine	-	-	41-116	-	38
1,4-dichlorobenzene	-	-	36-97	-	28
pentachlorophenol	-	-	9-103	-	50
phenol	-	-	12-110	-	42
2-chlorophenol	-	-	27-123	-	40
4-chloro-3-methylphenol	-	-	23-97	-	42
4-nitrophenol	-	-	10-80	-	50

No action was taken based on these results as other QC criteria (surrogates) were met.

4. SURROGATE

There were six base/neutral extractable surrogates added to each sample prior to extraction. All surrogate %R were within the QC limits listed below:

Surrogate	%R QC Limit
nitrobenzene-d5	35-114
terphenyl-d14	33-141
1-fluorobiphenyl	43-116
2-fluorophenol	21-110
2,4,6-tribromophenol	10-123
phenol-d5	10-110

5. FIELD DUPLICATES

Sample RAFB-SL16-C-E1 was a coded duplicate of sample RAFB-SL6-C-E1. The RPD QC limits for field duplicates are <20%. If the sample and/or the duplicate results are less than 5X the RL, the QC limit is ± 2X the RL. All results in both samples were reported as non-detect, therefore, the field precision was acceptable.

6. PROJECT REPORTING LIMITS

All project reporting limits were at or below the Georgia EPD NPDES required detection limits.

7. OVERALL ASSESSMENT OF DATA FOR THE CASE

The data quality objectives for measurement data include considerations for precision, accuracy, completeness, representativeness, and comparability. The data package as presented by Savannah Laboratories is 100% complete and all data are valid as qualified.

DATA VALIDATION OF

POLYNUCLEAR AROMATIC HYDROCARBONS (PAH) BY EPA 610

This report contains the validation of following samples.

Sample ID	Type	Matrix
RAFB-SL1-C-E1	Composite	Water
RAFB-SL2-C-E1	Composite	Water
RAFB-SL3-C-E1	Composite	Water
RAFB-SL4-C-E1	Composite	Water
RAFB-SL5-C-E1	Composite	Water
RAFB-SL6-C-E1	Composite	Water
RAFB-SL7-C-E1	Composite	Water
RAFB-SL8-C-E1	Composite	Water
RAFB-SL16-C-E1	Composite	Water

1. HOLDING TIMES

All samples were extracted within the required seven days of sample collection and analyzed within forty days of extraction.

2. BLANKS

There was one method blank in association with these samples. The blank was found to be free of all analyte contamination.

Data validation criteria for method blanks are that all associated sample results with concentrations less than 10X the common lab contaminants (all phthalates) and less than 5X all other analytes found in the blanks were flagged "U" and are considered to be non-detect at the value given.

3. SPIKE/SPIKE DUPLICATE (MS/MSD AND BS/BSD)

Sample RAFB-SL6-C-E1 was analyzed as the MS/MSD.

All %R and RPDs were within the QC limits as listed below:

Analyte	S %R	SD %R	QC Limit %R	RPD	QC Limit RPD
acenaphthene	-	-	44-162	-	52
chrysene	-	-	10-199	-	40
fluorene	-	-	10-142	-	40
naphthalene	-	-	50-135	-	40
pyrene	-	-	50-158	-	43

4. SURROGATE RECOVERY

There was one surrogate added to each sample. All surrogate %R were acceptable (QC limits 28-106%).

5. FIELD DUPLICATES

Sample RAFB-SL16-C-E1 was a coded duplicate of sample RAFB-SL6-C-E1. The RPD QC limits for field duplicates are <20%. If the sample and/or the duplicate results are less than 5X the RL, the QC limit is ± 2X the RL. All results in both samples were reported as non-detect, therefore,the field precision was acceptable.

6. PROJECT REPORTING LIMITS

All project reporting limits were below the Georgia EPD NPDES required detection limits. However, there were three sets of compounds which co-eluted:

a. chrysene and benzo(a)anthracene

b. indeno(1,2,3-cd)pyrene and dibenzo(a,h)anthracene

c. phenanthrene and anthracene

No action was required based on this as all results for these compounds were reported as non-detect.

7. OVERALL ASSESSMENT OF DATA FOR THE CASE

The data quality objectives for measurement data include considerations for precision, accuracy, completeness, representativeness, and comparability. The data package as presented by Savannah Laboratories is 100% complete and all data are valid within listed qualifiers.

DATA VALIDATION OF

PESTICIDES AND POLYCHLORINATED BIPHENYLS BY EPA 608

This report contains the validation of samples.

Sample ID	Type	Matrix
RAFB-SL1-C-E1	Composite	Water
RAFB-SL2-C-E1	Composite	Water
RAFB-SL3-C-E1	Composite	Water
RAFB-SL4-C-E1	Composite	Water
RAFB-SL5-C-E1	Composite	Water
RAFB-SL6-C-E1	Composite	Water
RAFB-SL7-C-E1	Composite	Water
RAFB-SL8-C-E1	Composite	Water
RAFB-SL16-C-E1	Composite	Water

1. HOLDING TIMES

The samples were extracted within 7 days of sampling and analyzed within 40 days of extraction.

2. BLANKS

There was one method blank in association with these samples. The blank was found to be free of all analyte contamination.

Data validation criteria for method blanks are that all associated sample results with concentrations less than 5X all other analytes found in the blanks were flagged "U" and are considered to be non-detect at the value given.

3. SURROGATE RECOVERY

One surrogate, dibutylchlorendate (DBC) was spiked into each sample to monitor the extraction and analysis procedures. All surrogate percent recoveries (%R) were within the QC Limits except:

Sample	Surrogate	%R	QC Limit	Qualifier
RAFB-SL3-C-E1	DCB	7.0	50-150%	"R"
RAFB-SL4-C-E1	DCB	4.0	50-150%	"R"

The analytes in the above samples are considered to be unusable ("R").

4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE(MS/MSD)TS

MS/MSD was performed on sample RAFB-S16-C-E1.

All %R and RPDs were within QC limits listed below:

Analyte	S %R	SD %R	QC Limit %R	RPD	QC Limit RPD
gamma-BHC	-	-	52-136	-	18
heptachlor	-	-	42-139	-	22
aldrin	-	-	42-116	-	25
dieldrin	-	-	51-143	-	46
endrin	-	-	57-142	-	23
4,4'-DDT	-	-	67-137	-	28

All BS(LCS) %R and RPDs were within QC limits.

5. FIELD DUPLICATES

Sample RAFB-SL16-C-E1 was a coded field duplicate of sample RAFB-SL6-C-E1. The RPD QC limits for field duplicates are <20%. If the sample and/or the duplicate results are less than 5X the RL, the QC limit is ± 2X the RL. All results in both samples were reported as non-detect, therefore, the field precision was acceptable.

6. PROJECT REPORTING LIMITS

All project reporting limits were at or below the Georgia EPD NPDES required detection limits.

7. OVERALL ASSESSMENT OF DATA FOR THE CASE

The data quality objectives for measurement data include considerations for precision, accuracy, completeness, representativeness, and comparability. The data package as presented by Savannah Laboratories is 77.8% complete due to non-compliant surrogate recoveries. All usable data are valid as qualified.

DATA VALIDATION OF

TRACE METALS BY ICP AND GFAA

This report contains the validation of the following samples.

Sample ID	Type	Matrix
RAFB-SL1-C-E1	Composite	Water
RAFB-SL2-C-E1	Composite	Water
RAFB-SL3-C-E1	Composite	Water
RAFB-SL4-C-E1	Composite	Water
RAFB-SL5-C-E1	Composite	Water
RAFB-SL6-C-E1	Composite	Water
RAFB-SL7-C-E1	Composite	Water
RAFB-SL8-C-E1	Composite	Water
RAFB-SL16-C-E1	Composite	Water

1. HOLDING TIMES

All samples were extracted and analyzed within the required time of sampling. The metals limit was six months from sampling.

2. BLANKS

There was one preparation blank analyzed in association with these samples. The blank was found to be free of analyte contamination.

All associated sample results with concentrations less than 5X found in the preparation and calibration blanks are flagged "U" and are considered to be non-detect at the value given.

3. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

Sample RAFB-SL6-C-E1 was analyzed as the MS/MSD. All %R and RPDs were compliant (QC limits 75-125% and 20% respectively).

All BS/BSD %R and RPD values were within the QC limits.

4. FIELD DUPLICATES

Samples RAFB-SL16-C-E1 was a coded field duplicate of sample RAFB-SL6-C-E1. The RPD QC limits for field duplicates are <20% If the sample and/or the duplicate results are less than 5X the RL, the QC limit is ± 2X the RL. The following lists the results of the coded duplicates.

	Results			
Analyte	Sample	Duplicate	%RPD	QC Limit
zinc	0.035	0.038	8.2	20%

All other results were reported as non-detect. Therefore, the field precision was acceptable.

5. PROJECT REPORTING LIMITS

All project reporting limits were at or below the Georgia EPD NPDES required detection limits.

6. OVERALL ASSESSMENT OF DATA FOR THE CASE

The data quality objectives for measurement data include considerations for precision, accuracy, completeness, representativeness, and comparability. The data package as presented by Savannah Laboratories is 100% complete and all usable data are valid as qualified.

DATA VALIDATION OF

CONVENTIONAL COMPOUNDS

This report contains the validation of the following samples.

Sample ID	Type	Matrix
RAFB-SL1-G-E1	Grab	Water
RAFB-SL2-G-E1	Grab	Water
RAFB-SL3-G-E1	Grab	Water
RAFB-SL4-G-E1	Grab	Water
RAFB-SL5-G-E1	Grab	Water
RAFB-SL6-G-E1	Grab	Water
RAFB-SL7-G-E1	Grab	Water
RAFB-SL8-G-E1	Grab	Water
RAFB-SL16-G-E1	Grab	Water

The listed samples were analyzed for cyanide (EPA Method 335.3), pH (EPA Method 150.1) and oil & grease (EPA Method 413.2).

I. HOLDING TIMES

All samples were analyzed within the required times of sampling (cyanide 14 days, oil & grease 28 days and pH 24 hours) except pH. All pH samples were analyzed 46-72 hours beyond sampling and all results were qualified "J" as estimated.

2. BLANKS

There was one method blank for each analysis in association with these samples. All blanks were found to be free of all analyte contamination.

Data validation criteria for method blanks are that all associated sample results with concentrations less than 10X the common lab contaminants (acetone, 2-butanone and methylene chloride) and less than 5X all other analytes found in the blanks were flagged "U" and are considered to be non-detect at the value given. No qualification was required as all results for these compounds were either reported as non-detect or were >10X the blank value.

3. SPIKE/ SPIKE DUPLICATE (MS/MSD AND BS/BSD)

Sample RAFB-SL6-G-E1 was analyzed as the MS/MSD for cyanide and oil & grease.

All %R and RPDs were compliant (QC limits 75-125% and 20% respectively).

All BS(LCS) percent recoveries were within QC limits for all analyses.

4. SURROGATE

There were no surrogates required for these analyses.

5. FIELD DUPLICATES

Sample RAFB-SL16-G-E1 was a coded field duplicate of sample RAFB-SL6-G-E1. The RPD QC limits for field duplicates are <20%. If the sample and/or the duplicate

results are less than 5X the RL, the QC limit is ± 2X the RL. All RPDs were within the QC limits, therefore, the field precision was acceptable.

6. PROJECT REPORTING LIMITS

All reporting limits were acceptable.

7. OVERALL ASSESSMENT OF DATA FOR THE CASE

The data quality objectives for measurement data include considerations for precision, accuracy, completeness, representativeness and comparability. The data package as presented by Savannah Laboratories is 100% complete and all data are valid as qualified.

DATA VALIDATION OF

CONVENTIONAL COMPOUNDS

This report contains the validation of the following samples.

Sample ID	Type	Matrix
RAFB-SL1-C-E1	Composite	Water
RAFB-SL2-C-E1	Composite	Water
RAFB-SL3-C-E1	Composite	Water
RAFB-SL4-C-E1	Composite	Water
RAFB-SL5-C-E1	Composite	Water
RAFB-SL6-C-E1	Composite	Water
RAFB-SL7-C-E1	Composite	Water
RAFB-SL8-C-E1	Composite	Water
RAFB-SL16-C-E1	Composite	Water

The listed samples were analyzed for chemical oxygen demand (EPA 410.2), fluoride (EPA 340.2), residual chlorine (Standard Method 408A), biochemical oxygen demand (EPA 405.1), total suspended solids (EPA 160.2), total dissolved solids (EPA 160.1), fecal coliform (Standard Method 9222-D), total recoverable phenolics (EPA 420.2), total kjeldahl nitrogen (EPA 351.2), ammonia-nitrogen (EPA 350.1), nitrate + nitrite-nitrogen (EPA 353.2), organic nitrogen (EPA 351.2/350.1) and total phosphorus (EPA 365.4).

I. HOLDING TIMES

The holding times for the methods are listed below:

Analyte	Method	Holding Time
COD	EPA 410.2	28 days
fluoride	EPA 340.2	28 days
res. chlorine	SM408A	24 hours
BOD	EPA 405.1	48 hours
TSS	EPA 160.2	7 days
TDS	EPA 160.1	7 days
fecal coliform	SM9222-D	30 hours
phenolics	EPA 420.2	28 days
kjeldahl nitrogen	EPA 351.2	28 days
ammonia nitrogen	EPA 350.1	28 days
NO_3/NO_2-nitrogen	EPA 353.2	28 days
organic nitrogen	EPA 351.2/350.1	28 days
phosphorus	EPA 365.4	28 days

All samples were analyzed within required holding times except residual chlorine (analyzed ≈92-120 hours beyond sampling) and fecal coliform (analyzed ≈68-96 hours beyond sampling). All results for both of these analyses were qualified "J" or "UJ" as estimated.

2. BLANKS

There was one method blank in association with these samples. The blank was found to be free of all analyte contamination.

Data validation criteria for method blanks are that all associated sample results with concentrations less than 10X the common lab contaminants (phthalates) and less than 5X all other analytes found in the blanks were flagged "U" and are considered to be non-detect at the value given.

3. SPIKE/SPIKE DUPLICATE (MS/MSD AND BS/BSD)

Sample RAFB-SL6-C-E1 was analyzed as the MS/MSD.

All %R and RPDs were compliant except:

Analyte	S %R	SD %R	QC Limit %R	RPD	QC Limit RPD
NO_3/NO_2-nitrogen	62	67	75-125	-	20%
ammonia-nitrogen	71	74	75-125	-	20%

All ammonia-nitrogen and NO_3/NO_2-nitrogen results were qualified "J" or "UJ" as estimated.

4. SURROGATE

There were no surrogates required for these analyses.

5. FIELD DUPLICATES

Sample RAFB-SL16-C-E1 was a coded duplicate of sample RAFB-SL6-C-E1. The RPD QC limits for field duplicates are <20%. If the sample and/or the duplicate results are less than 5X the RL, the QC limit is ± 2X the RL. All RPDs were within QC limits, therefore, the field precision was acceptable.

6. PROJECT REPORTING LIMITS

All project reporting limits were acceptable.

7. OVERALL ASSESSMENT OF DATA FOR THE CASE

The data quality objectives for measurement data include considerations for precision, accuracy, completeness, representativeness, and comparability. The data package as presented by Savannah Laboratories is 100% complete and all data are valid as qualified.

DATA VALIDATION REPORTS FOR THE ANALYTICAL DATA RESULTING FROM THE DECEMBER 4, 1993 RAIN EVENT

DATA VALIDATION OF

VOLATILE ORGANIC COMPOUNDS BY EPA 624

This report contains the validation of the following samples:

Sample ID	Type	Matrix
RAFB-SL9-G-E1	Grab	Water
RAFB-SL10-G-E1	Grab	Water
RAFB-SL11-G-E1	Grab	Water
RAFB-SL12-G-E1	Grab	Water
RAFB-SL13-G-E1	Grab	Water
RAFB-TB2	Grab	Water

I. HOLDING TIMES

All samples were analyzed within the required 14 days of sampling.

2. BLANKS

There was one method blank and one trip blank in association with these samples. All blanks were found to be free of analyte contamination.

Data validation criteria for method blanks and trip blanks are that all associated sample results with concentrations less than 10X the common lab contaminants (acetone, 2-butanone and methylene chloride) and less than 5X all other analytes found in the blanks were flagged "U" and are considered to be non-detect at the value given.

3. SPIKE/ SPIKE DUPLICATE (MS/MSD AND BS/BSD)

Sample RAFB-SL10-G-E1 was analyzed as the MS/MSD.

All %R and RPDs were compliant except:

Analyte	S %R	SD %R	QC Limit %R	RPD	QC Limit RPD
benzene	141	-	76-127	-	11
chlorobenzene	-	-	75-130	-	13
toluene	146	-	76-125	-	13
1,1-dichloroethene	-	-	61-145	-	14
trichloroethene	123	-	71-120	-	14

No flags were assigned based on these results as other QC criteria (surrogates) were within acceptance limits.

All BS(LCS) percent recoveries were within QC limits.

4. SURROGATE

There were three surrogates added to each sample. All surrogate %R were within the QC limits listed below:

Surrogate	%R QC Limit
1,2-dichloroethane-d4	76-114
toluene-d8	88-110
bromofluorobenzene	86-115

5. FIELD DUPLICATES

Sample RAFB-SL13-G-E1 was a coded field duplicate of sample RAFB-SL10-G-E1. The RPD QC limits for field duplicates are <20%. If the sample and/or the duplicate results are less than 5X the RL, the QC limit is ± 2X the RL. All RPDs were within QC limits.

6. PROJECT REPORTING LIMITS

All reporting limits were at or below the Georgia EPD NPDES required detection limits.

7. OVERALL ASSESSMENT OF DATA FOR THE CASE

The data quality objectives for measurement data include considerations for precision, accuracy, completeness, representativeness and comparability. The data package as presented by Savannah Laboratories is 100% complete and all data are valid as qualified.

DATA VALIDATION OF

SEMIVOLATILE ORGANIC COMPOUNDS (BNA) BY EPA 625

This report contains the validation of following samples:

Sample ID	Type	Matrix
RAFB-SL9-C-E1	Composite	Water
RAFB-SL10-C-E1	Composite	Water
RAFB-SL11-C-E1	Composite	Water
RAFB-SL12-C-E1	Composite	Water
RAFB-SL13-C-E1	Composite	Water

1. HOLDING TIMES

All samples were extracted within the required seven days of sample collection and analyzed within forty days of extraction.

2. BLANKS

There was one method blank in association with these samples. The blank was found to be free of all analyte contamination.

Data validation criteria for method blanks are that all associated sample results with concentrations less than 10X the common lab contaminants (phthalates) and less than 5X all other analytes found in the blanks were flagged "U" and are considered to be non-detect at the value given.

3. SPIKE/SPIKE DUPLICATE (MS/MSD AND BS/BSD)

Sample RAFB-SL10-C-E1 was analyzed as the MS/MSD.

All %R and RPDs were within the QC limits listed below:

Analyte	QC Limit %R	QC Limit RPD
2,4-dinitrotoluene	24-96	38
1,2,4-trichlorobenzene	39-98	28
acenaphthene	46-118	31
pyrene	26-127	31
N-nitroso-di-n-propylamine	41-116	38
1,4-dichlorobenzene	36-97	28
pentachlorophenol	9-103	50
phenol	12-110	42
2-chlorophenol	27-123	40
4-chloro-3-methylphenol	23-97	42
4-nitrophenol	10-80	50

4. SURROGATE

There were six base/neutral extractable surrogates added to each sample prior to extraction. All surrogate %R were within the QC limits listed below:

Surrogate	%R QC Limit
nitrobenzene-d5	35-114
terphenyl-d14	33-141
1-fluorobiphenyl	43-116
2-fluorophenol	21-110
2,4,6-tribromophenol	10-123
phenol-d5	10-110

5. FIELD DUPLICATES

Sample RAFB-SL13-C-E1 was a coded duplicate of sample RAFB-SL10-C-E1. The RPD QC limits for field duplicates are <20%. If the sample and/or the duplicate results are less than 5X the RL, the QC limit is ± 2X the RL. All results in both samples were reported as non-detect, therefore, the field precision was acceptable.

6. PROJECT REPORTING LIMITS

All project reporting limits were at or below the Georgia EPD NPDES requited detection limits.

7. OVERALL ASSESSMENT OF DATA FOR THE CASE

The data quality objectives for measurement data include considerations for precision, accuracy, completeness, representativeness, and comparability. The data package as presented by Savannah Laboratories is 100% complete and all data are valid as qualified.

DATA VALIDATION OF

POLYNUCLEAR AROMATIC HYDROCARBONS (PAH) BY EPA 610

This report contains the validation of following samples:

Sample ID	Type	Matrix
RAFB-SL9-C-E1	Composite	Water
RAFB-SL10-C-E1	Composite	Water
RAFB-SL11-C-E1	Composite	Water
RAFB-SL12-C-E1	Composite	Water
RAFB-SL13-C-E1	Composite	Water

1. HOLDING TIMES

All samples were extracted within the required seven days of sample collection and analyzed within forty days of extraction.

2. BLANKS

There was one method blank in association with these samples. The blank was found to be free of all analyte contamination.

Data validation criteria for method blanks are that all associated sample results with concentrations less than 10X the common lab contaminants (all phthalates) and less than 5X all other analytes found in the blanks were flagged "U" and are considered to be non-detect at the value given.

3. SPIKE/SPIKE DUPLICATE (MS/MSD AND BS/BSD)

Sample RAFB-SL10-C-E1 was analyzed as the MS/MSD.

All %R and RPDs were within the QC limits as listed below:

Analyte	QC Limit %R	QC Limit RPD
acenaphthene	44-162	52
benzo(a)pyrene	10-199	40
fluorene	10-142	40
naphthalene	50-135	40
pyrene	50-158	43

4. SURROGATE RECOVERY

There was one surrogate added to each sample. All surrogate %R were acceptable (QC limits 28-106%).

5. FIELD DUPLICATES

Sample RAFB-SL13-C-E1 was a coded duplicate of sample RAFB-SL10-C-E1. The RPD QC limits for field duplicates are <20%. If the sample and/or the duplicate results are less than 5X the RL, the QC limit is ± 2X the RL. All results in both samples were reported as non-detect, therefore, the field precision was acceptable.

6. PROJECT REPORTING LIMITS

All project reporting limits were below the Georgia EPD NPDES required detection limits. However, there were three sets of compounds which co-eluted:

a. chrysene and benzo(a)anthracene

b. indeno(1,2,3-cd)pyrene and dibenzo(a,h)anthracene

c. phenanthrene and anthracene

No action was required based on this as all results for these compounds were reported as non-detect.

7. OVERALL ASSESSMENT OF DATA FOR THE CASE

The data quality objectives for measurement data include considerations for precision, accuracy, completeness, representativeness, and comparability. The data package as presented by Savannah Laboratories is 100% complete and all data are valid within listed qualifiers.

DATA VALIDATION OF

PESTICIDES AND POLYCHLORINATED BIPHENYLS BY EPA 608

This report contains the validation of the following samples:

Sample ID	Type	Matrix
RAFB-SL9-C-E1	Composite	Water
RAFB-SL10-C-E1	Composite	Water
RAFB-SL11-C-E1	Composite	Water
RAFB-SL12-C-E1	Composite	Water
RAFB-SL13-C-E1	Composite	Water

1. HOLDING TIMES

The samples were extracted within 7 days of sampling and analyzed within 40 days of extraction.

2. BLANKS

There was one method blank in association with these samples. The blank was found to be free of all analyte contamination.

Data validation criteria for method blanks are that all associated sample results with concentrations less than 5X all other analytes found in the blanks were flagged "U" and are considered to be non-detect at the value given.

3. SURROGATE RECOVERY

One surrogate, dibutylchlorendate (DBC) was spiked into each sample to monitor the extraction and analysis procedures. All surrogate percent recoveries (%R) were within the QC Limits except:

Sample	Surrogate	%R	QC Limit
RAFB-SL9-C-E1	DBC	36	50-150%
RAFB-SL11-C-E1	DBC	48	50-150%
RAFB-SL12-C-E1	DBC	38	50-150%

The analytes in the above samples are considered to be estimated and qualified "UJ".

4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE(MS/MSD)TS

MS/MSD was performed on sample RAFB-SL10-C-E1.

All %R and RPDs were within QC limits listed below except:

Analyte	S %R	SD %R	QC Limit %R	RPD	QC Limit RPD
gamma-BHC	-	-	52-136	-	18
heptachlor	-	-	42-139	-	22
aldrin	-	-	42-116	-	25
dieldrin	-	-	51-143	-	46
endrin	-	-	57-142	26	23
4,4'-DDT	-	-	67-137	-	28

No action was taken based on the non-compliant RPD as both %R values were within the QC limits.

All BS(LCS) %R and RPDs were within QC limits.

5. FIELD DUPLICATES

Sample RAFB-SL13-C-E1 was a coded field duplicate of sample RAFB-SL10-C-E1. The RPD QC limits for field duplicates are <20%. If the sample and/or the duplicate results are less than 5X the RL, the QC limit is ± 2X the RL. All results in both samples were reported as non-detect, therefore, the field precision was acceptable.

6. PROJECT REPORTING LIMITS

All project reporting limits were at or below the Georgia EPD NPDES required detection limits.

7. OVERALL ASSESSMENT OF DATA FOR THE CASE

The data quality objectives for measurement data include considerations for precision, accuracy, completeness, representativeness, and comparability. The data package as presented by Savannah Laboratories is 77.8% complete due to non-compliant surrogate recoveries. All usable data are valid as qualified.

DATA VALIDATION OF

TRACE METALS BY ICP AND GFAA

This report contains the validation of the following samples:

Sample ID	Type	Matrix
RAFB-SL9-C-E1	Composite	Water
RAFB-SL10-C-E1	Composite	Water
RAFB-SL11-C-E1	Composite	Water
RAFB-SL12-C-E1	Composite	Water
RAFB-SL13-C-E1	Composite	Water

1. HOLDING TIMES

All samples were extracted and analyzed within the required time of sampling. The metals limit was six months from sampling.

2. BLANKS

There was one preparation blank analyzed in association with these samples. The blank was found to be free of analyte contamination.

All associated sample results with concentrations less than 5X found in the preparation and calibration blanks are flagged "U" and are considered to be non-detect at the value given.

3. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

Sample RAFB-SL10-C-E1 was analyzed as the MS/MSD. All %R and RPDs were compliant (QC limits 75-125% and 20% respectively).

All BS/BSD %R and RPD values were within the QC limits.

4. FIELD DUPLICATES

Samples RAFB-SL13-C-E1 was a coded field duplicate of sample RAFB-SL10-C-E1. The RPD QC limits for field duplicates are <20% If the sample and/or the duplicate results are less than 5X the RL, the QC limit is ± 2X the RL. All RPD values were within the QC limits.

5. PROJECT REPORTING LIMITS

All project reporting limits were at or below the Georgia EPD NPDES required detection limits.

6. OVERALL ASSESSMENT OF DATA FOR THE CASE

The data quality objectives for measurement data include considerations for precision, accuracy, completeness, representativeness, and comparability. The data package as presented by Savannah Laboratories is 100% complete and all usable data are valid as qualified.

DATA VALIDATION OF

CONVENTIONAL COMPOUNDS

This report contains the validation of the following samples:

Sample ID	Type	Matrix
RAFB-SL9-G-E1	Grab	Water
RAFB-SL10-G-E1	Grab	Water
RAFB-SL11-G-E1	Grab	Water
RAFB-SL12-G-E1	Grab	Water
RAFB-SL13-G-E1	Grab	Water

The listed samples were analyzed for cyanide (EPA Method 335.3), pH (EPA Method 150.1) and oil & grease (EPA Method 413.2).

I. HOLDING TIMES

All samples were analyzed within the required times of sampling (cyanide 14 days, oil & grease 28 days and pH 24 hours) except pH. All pH samples were analyzed ≈51-76 hours beyond sampling and all results were qualified "J" as estimated.

2. BLANKS

There was one method blank for each analysis in association with these samples. The blanks were found to be free of all analyte contamination.

Data validation criteria for method blanks are that all associated sample results with concentrations less than 5X the level found in the blanks were flagged "U" and are considered to be non-detect at the value given.

3. SPIKE/ SPIKE DUPLICATE (MS/MSD AND BS/BSD)

Sample RAFB-SL10-G-E1 was analyzed as the MS/MSD for cyanide and oil & grease.

All %R and RPDs were compliant (QC limits 75-125% and 20% respectively).

All BS(LCS) percent recoveries were within QC limits for all analyses.

4. SURROGATE

There were no surrogates required for these analyses.

5. FIELD DUPLICATES

Sample RAFB-SL13-G-E1 was a coded field duplicate of sample RAFB-SL10-G-E1. The RPD QC limits for field duplicates are <20%. If the sample and/or the duplicate results are less than 5X the RL, the QC limit is ± 2X the RL. All RPDs were within the QC limits, therefore, the field precision was acceptable.

6. PROJECT REPORTING LIMITS

All reporting limits were acceptable.

7. OVERALL ASSESSMENT OF DATA FOR THE CASE

The data quality objectives for measurement data include considerations for precision, accuracy, completeness, representativeness and comparability. The data package as presented by Savannah Laboratories is 100% complete and all data are valid as qualified.

DATA VALIDATION OF

CONVENTIONAL COMPOUNDS

This report contains the validation of the following samples:

Sample ID	Type	Matrix
RAFB-SL9-C-E1	Composite	Water
RAFB-SL10-C-E1	Composite	Water
RAFB-SL11-C-E1	Composite	Water
RAFB-SL12-C-E1	Composite	Water
RAFB-SL13-C-E1	Composite	Water

The listed samples were analyzed for chemical oxygen demand (EPA 410.2), fluoride (EPA 340.2),, biochemical oxygen demand (EPA 405.1), total suspended solids (EPA 160.2), total dissolved solids (EPA 160.1), fecal coliform (Standard Method 9221-C), total recoverable phenolics (EPA 420.2), total kjeldahl nitrogen (EPA 351.2), ammonia-nitrogen (EPA 350.1), nitrate + nitrite-nitrogen (EPA 353.2), organic nitrogen (EPA 351.2/350.1) and total phosphorus (EPA 365.4).

I. HOLDING TIMES

The holding times for the methods are listed below:

Analyte	Method	Holding Time
COD	EPA 410.2	28 days
fluoride	EPA 340.2	28 days
BOD	EPA 405.1	48 hours
TSS	EPA 160.2	7 days
TDS	EPA 160.1	7 days
fecal coliform	SM9221-C	30 hours
phenolics	EPA 420.2	28 days
kjeldahl nitrogen	EPA 351.2	28 days
ammonia nitrogen	EPA 350.1	28 days
NO_3/NO_2-nitrogen	EPA 353.2	28 days
organic nitrogen	EPA 351.2/350.1	28 days
phosphorus	EPA 365.4	28 days

All samples were analyzed within required holding times except biochemical oxygen demand (analyzed ≈49-76 hours beyond sampling) and fecal coliform (analyzed ≈49-76 hours beyond sampling). All results for both of these analyses were qualified "J" or "UJ" as estimated.

2. BLANKS

There was one method blank in association with these samples. (There were two method blanks for the total recoverable phenolics method.) The blanks were found to be free of all analyte contamination.

Data validation criteria for method blanks are that all associated sample results with concentrations less than 10X the common lab contaminants (phthalates) and less than 5X

all other analytes found in the blanks were flagged "U" and are considered to be non-detect at the value given.

3. SPIKE/SPIKE DUPLICATE (MS/MSD AND BS/BSD)

Sample RAFB-SL10-C-E1 was analyzed as the MS/MSD.

All %R and RPDs were compliant except:

Analyte	S %R	SD %R	QC Limit %R	RPD	QC Limit RPD
phosphorus	65	32	75-125	68	20%
kjeldahl-nitrogen	73	-	75-125	29	20%
ammonia-nitrogen	48	52	75-125	-	20%

All phosphorus, kjeldahl-nitrogen and ammonia-nitrogen results were qualified "J" or "UJ" as estimated.

4. SURROGATE

There were no surrogates required for these analyses.

5. FIELD DUPLICATES

Sample RAFB-SL13-C-E1 was a coded duplicate of sample RAFB-SL10-C-E1. The RPD QC limits for field duplicates are <20%. If the sample and/or the duplicate results are less than 5X the RL, the QC limit is ± 2X the RL. All RPDs were within QC limits except as listed below:

Analyte	Sample	Duplicate	RPD	QC Limit
COD	ND	28	> 2X RL	20
coliform	ND	20	> 2X RL	4
ammonia-nitrogen	0.15	0.0084	56.4%	20%
nitrogen-organic	0.50	0.63	23%	20%

The positive results for these analytes were qualified "J" as estimated.

6. PROJECT REPORTING LIMITS

All project reporting limits were acceptable.

7. OVERALL ASSESSMENT OF DATA FOR THE CASE

The data quality objectives for measurement data include considerations for precision, accuracy, completeness, representativeness, and comparability. The data package as presented by Savannah Laboratories is 100% complete and all data are valid as qualified.